SHARP® SERVICE MANUAL

S1301R207PHW/

MICROWAVE OVEN

MODELS R-207(IN) R-207(W)

In interests of user-safety the oven should be restored to its original condition and only parts identical to those specified should be used.

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SHARP CORPORATION

CAUTION
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from the magnetron or other microwave generating devices if it is improperly used or connected.
All input and output microwave connections, waveguides, flanges and gaskets must be secured.
Never operate the device without a microwave energy absorbing load attached.
Never look into an open waveguide or antenna while the device is energized.

VARNING
MICKROVAGSSTRALING

Personal får inte utsättas för mikrovågsenergi som kan ustrala från magnetronen eller andre mikrovågsalstrande anordningar om dessa är felanslutna eller används på fel sätt.
Alla in-och utgångsanslutningar för mikrovågor, vagledare, flänsar och packningar måste vara fast anslutna.
Mikrovågsgeneratorn får inte arbeta utan att absorberande belastning är ansluten. Titta aldrig in i ën öppen vågledare eller antenn när mikrovågsgeneratorn är påkopplad eller laddad.

VAROITUS
MIKROAALTOSÄTELYÄ

Käyttäjä ei saa joutua alttiiksi mikroaaltoenergialle, jota voi säteillä magnetronista tai muusta mikroaaltoja kehittävästä laitteesta, jos sitä käytetään tai jos se kytketään väärin.
Kaikkien mikroaaltoliitäntöjen sekä syöttö-että ulostulopuolella, aaltoputkien laippojen ja tiivisteiden tulee olla varmistettuja.
Mikroaaltouunnia ei koskaan saa käyttää ilman kuormaa jossa mikroaaltoenergiaa kuluu.
Avoimeen aaltoputkeen tai antenniin ei koskaan saa katsoa virran ollessa kytkettynä.

ADVARSEL
MIKROBØLGESTRÅLING

Personell må ikke utsettes for mikrobølge-energi som kan utståles fra magnetronen eller andre mikrobølge-generende deler dersom apparatet feilbetjenes eller blir feiltikoplet.
Alle inn-og ut-tilkoplinger i forbindelse med mikrobølge-strålingen, bølgeledere, flenser og tetningsringer/pakninger må festes ordentlig.
Aldri bruk apparatet med mindre en mikrobålge-absorberende last er plassert i ovnsrommet.
Aldri se direkte inn i en åpen bølgeleder eller antenne imens apparatet er strømførende.

ADVARSEL
MIKROBØLGEBESTRÄLING

Man bør ikke udsætte sig for mikrobølgebestråling fra magnetronen eller andre mikrobølgefrembringende anordninger, hvilket kan ske hvis apparatet er forkert tilsluttet eller bruges forkert. Alle mikrobølgeindgange og-udgange, bølgeledere, flanger og tætningsstrimler må være forsvarligt udført.
Anvend aldrig ovnen uden en mikrobølgesabsorberende anordning. Se aldrig ind i en åben bølgeleder eller antenne, mens ovnen er i brug.

SERVICE MANUAL

SHARP

MICROWAVE OVEN

R-207(IN)/ R-207(W)

GENERAL IMPORTANT INFORMATION

This Manual has been prepared to provide Sharp Corp. Service engineers with Operation and Service Information.

It is recommended that service engineers carefully study the entire text of this manual, so they will be qualified to render satisfactory customer service.

WARNING

Note:	The parts marked "*" are used at voltage more than 250V. (Parts List)
Anm:	Delar märket med "*" har en spänning överstigande 250V.
Huom:	Huolto-ohjeeseen merkitty "tähdella" osat joissa jännite on yli 250 V.
Bemerk:	Deler som er merket "asterisk" er utsatt for spenninger over 250V til jord.
Bemærk:	"Dele mærket med stjerne benyttes med højere spænding end 250 volt.

WARNING

Never operate the oven until the following points are ensured.
(A) The door is tightly closed.
(B) The door brackets and hinges are not defective.
(C) The door packing is not damaged.
(D) The door is not deformed or warped.
(E) There is not any other visible damage with the oven.

Servicing and repair work must be carried out only by trained service engineers.

Removal of the outer wrap gives access to potential above 250V.

All the parts marked "Δ" on the parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

SERVICING
PRODUCT SPECIFICATIONS
GENERAL INFORMATION
APPEARANCE VIEW
OPERATING SEQUENCE
FUNCTION OF IMPORTANT COMPONENTS
TROUBLESHOOTING GUIDE AND TEST PROCEDURE
TOUCH CONTROL PANEL
COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE
MICROWAVE MEASUREMENT
TEST DATA AT A GLANCE
WIRING DIAGRAM
PARTS LIST

SHARP CORPORATION

OSAKA, JAPAN

SERVICING

WARNING TO SERVICE PERSONNEL

(GB) Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts will result in electrocution.
High voltage capacitor, Power transformer, Magnetron, High voltage rectifier assembly, High voltage harness.

REMEMBER TO CHECK 3D

1) Disconnect the supply.
2) Door opened, and wedged open.
3) Discharge high voltage capacitor.

WARNING: AGAINST THE CHARGE OF THE HIGH-VOLTAGE CAPACITOR
The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is, of the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Sharp recommend that wherever possible fault-finding is carried out with the supply disconnected. It may in, some cases, be necessary to connect the supply after the outer case has been removed, in this event carry out 3D checks and then disconnect the leads to the primary of the power transformer. Ensure that these leads remain isolated from other components and the oven chassis. (Use insulation tape if necessary.) When the testing is completed carry out 3D checks and reconnect the leads to the primary of the power transformer.

REMEMBER TO CHECK 4R

1) Reconnect all leads removed from components during testing.
2) Replace the outer case (cabinet).
3) Reconnect the supply.
4) Run the oven. Check all functions.

Microwave ovens should not be run empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven turntable, close the door and set the power to HIGH and set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out 3D checks and re-examine the connections to the component being tested.

When all service work is completed, and the oven is fully assembled, the microwave power output should be checked and a microwave leakage test should be carried out.

(NL) Magnetronovens bevatten circuits die een zeer hoge spanning en stroom kunnen voortbrengen. Contact met de volgende onderdelen kan elektrocutie tot gevolg hebben.
Hoogspanningscondensator, hoogspanningstransformator, magnetron, hoogspanningsgelijkrichter, hoogspannings kabelboom.

VERGEET DE VOLGENDE 3 STAPPEN NIET

1) Haal de stekker uit het stopcontact.
2) Open de deur en zorg ervoor dat hij niet dicht kan vallen.
3) Ontlaad de hoogspanningscondensator.

PAS OP VOOR DE ELECTRISCHE LADING VAN DE HOOGSPANNINGSCONDENSATOR
De hoogspanningscondensator blijft nog ongeveer 60 seconden lang opgeladen, nadat de oven is uitgeschakeld. Wacht 60 seconden voordat u de verbinding van de hoogspannings-condensator (m.a.w. de verbindingsdraad van de hoogspanningsgelijkrichter) met een geïsoleerde schroevedraaier kortsluit tegen het chassis.

Sharp beveelt ten sterkste aan dat, voor zover mogelijk, defecten worden opgespoord wanneer de stekker uit het stopcontact is gehaald. Soms is het nodig om de stroomtoevoer weer tot stand te brengen nadat de buitenmantel verwijderd is. Herhaal dan de bovengenoemde 3 stappen en haal de electrische draden uit de primaire zijde van de vermogenstransformator. Zorg ervoor dat deze draden geïsoleerd blijven van andere elementen en van het chassis van de oven. (Gebruik zo nodig isolatieband.) Wanneer de test is uitgevoerd, herhaalt u de bovenstaande 3 stappen en verbindt u de electrische draden weer aan de primaire zijde van de vermogenstransformator.

VERGEET DE VOLGENDE 4 STAPPEN NIET

1) Sluit de draden weer aan diezijn losgehaald voor de test.
2) Plaats de buitenmantel weer om het toestel heen (kabinet).
3) Stop de stekker weer in het stopcontact.
4) Zet de oven aan. Controleer alle functies.

Magnetronovens mogen niet leeg aangezet worden. Om te controleren of er microgolf-energie binnen de oven wordt geproduceerd, plaatst u een mok met koud water op de draaitafel van de oven, sluit de deur, zet de oven op HIGH en stelt de klok van de magnetron in op twee (2) minuten. Wanneer de twee minuten voorbij zijn (klok staat op nul), controleert u voorzichtig of het water heet is. Indien het water nog steeds koud is, herhaalt u de allereerste drie stappen en controleer nogmaals de aansluitingen naar de geteste onderdelen.

Wanneer alle reparaties zijn uitgevoerd en de oven weer in elkaar is gezet, moet de het magnetronvermogen worden gecontroleerd en moet worden gecontroleerd of er geen microgolflekkage is.

(E) Los hornos de microondas contienen circuitos eléctricos capaces de producir voltajes de alta tensión y descargas eléctricas. Para evitar el riesgo de electrocución, absténgase de tocar los siguientes componentes: condensador de alta tensión, transformador de alta tensión, magnetrón, dispositivo del rectificador de alta tensión y arnés de alta tensión.

RECUERDE LA COMPROBACION 3D

1) Desconecte la alimentación.
2) Deje la puerta abierta y calzada.
3) Descargue el condensador de alto voltaje.

ADVERTENCIA SOBRE LA CARGA DEL CONDENSADOR DE ALTO VOLTAJE
El condensador de alto voltaje permanece cargado unos 60 segundos después de haber apagado el horno. Espere 60 segundos y luego ponga en cortocircuito la conexión del condensador de alto voltaje (esto es, del conductor de conexión del rectificador de alto voltaje) al chasis con un destornillador de mango aislado.

Se recomienda encarecidamente que siempre que sea posible la localización de fallos se realice con la alimentación desconectada. Puede ser que en algunos casos sea necesario conectar la alimentación después de haber retirado la carcasa exterior. En este caso, realice las comprobaciones 3D y luego desconecte los conductores del primario del transformador de alimentación. Asegúrese de que estos conductores permanezcan aislados de otros componentes y del chasis del horno. (Use cinta aislante si es necesario). Cuando termine la prueba efectúe las comprobaciones 3D y reconecte los conductores al primario del transformador de alimentación.

RECUERDE LA COMPROBACION 4C

1) Conecte todos los componentes desconectados de los componentes durante la prueba.
2) Coloque la carcasa exterior (cabina).
3) Conecte la alimentación.
4) Compruebe todas sus funciones despues de poner en marcha el horno.

Los hornos de microondas no deben funcionar vacíos. Para comprobar la presencia de energía de microondas dentro de una cavidad, coloque una taza de agua fría en el plato giratorio del horno, cierre la puerta y ponga la potencia en HIGH (alta) y coloque el temporizador en dos (2) minutos. Cuando transcurran los dos minutos (temporizador a cero) compruebe cuidadosamente que el agua se ha calentado. Si el agua permaneciese fría, efectúe las comprobaciones 3D y vuelva a examinar las conexiones de los componentes que han sido probados.

Cuando haya terminado la intervención en el equipo y el horno haya sido ensamblado de nuevo completamente, deberá comprobar la potencia de salida de microondas y realizar una prueba de fugas de microondas.

(SV) Mikrovågsugnar innehåller kretsar som producerar mycket höga spänningar och strömmar.
Kontakt med följande komponenter kan leda till dödsfall:
Högspänningskondensator, transformator, magnetron, högspännings likriktare, högspännings kablage.

KOM IHÅG ATT KONTROLLERA 3 STEG

1) Koppla från strömkällan.
2) Öppna dörren på gläntt.
3) Ladda ur högspänningskondensatorn.

VARNING FÖR LADDNINGEN I HÖGSPÄNNINGSKONDENSATORN
Högspänningskondensatorn är laddad i 60 sekunder efter det att ugnen stängts av. Vänta 60 sekunder och korislut sedan kondensatoms anslutning (dvs anslutningen till högspänningslikriktaren) till chassiet med hjälp av en isolerad skruvmejsel.

Sharp rekommenderar att felsökning sker med strömmen fränkopplad. Ibland kan det var nödvändigt att koppla på strömmen efter det att höljet avlägsnats, utför da 3 Steg kontrollen och koppla sedan från ledarna till transformatorns primärsida. Se till att ledarna är isolerade från andra komponenter och chassiet. (Använd isoleringsband om det behövs). När Du testat färdigt utför Du 3 Steg kontrollen och ansluter ledningarna till transformatorns primärsida igen.

KOM IHÅG ATT KONTROLLERA 4 STEG

1) Anslut alla ledningar som använts vid testning
2) Sätt tillbaka ytterhöljet.
3) Anslut strömkällan på nytt.
4) Sätt på ugnen. Kontrollera alla funktioner.

Mikrovågsugnar får inte användas tomma. Kontrollera mikrovågsstrålningen i olika delar av ugnen genom att placera en kopp med kallt vatten på ugnens tallrik, stäng dörren, ställ in HIGH och ställ in 2 minuter på timern. När två minuter har gått (timem visar 0) kontrollerar du om vattnet är varmt. Om vattnet fortfarande är kallt utför Du 3 steg kontroller och kontrollerar anslutningarna till varje enskild komponent på nytt.

När all service är klar och ugnen ihopskruvad skall ugnens uteffekt och eventuellt mikrovågsläckage kontrolleras.

(I) I forni a microonde contengono un circuito elettrico in grado di generare tensioni e correnti estremamente elevate. L'eventuale contatto con i seguenti componenti può causare la folgorazione:
condensatore ad alta tensione; trasformatore ad alta tensione; magnetron; rettificatore alta tensione; cablaggio ad alta tensione.

TRE OPERAZIONI IMPORTANTI PER INCOMINCIARE

1) Scollegare l'alimentazione elettrica.
2) Verificare che la porta sia bloccata in posizione aperta.
3) Scaricare il condensatore ad alta tensione.

ATTENZIONE AL CONDENSATORE AD ALTA TENSIONE: PUO ESSERE CARICO
Il condensatore ad alta tensione rimane carico per circa 60 secondi dopo lo spegnimento del forno. Occorre quindi spettare 60 secondi prima di cortocircuitare, utilizzando un cacciavite con impugnatura isolata, il collegamento del condensatore ad alta tensione (cioè del conduttore di collegamento del raddrizzatore ad alta tensione) sul telaio del forno.

Sharp raccomanda, nei limiti del possibile, che la ricerca dei guasti avvenga in assenza di alimentazione elettrica. In alcuni casi tuttavia, può essere necessario alimentare l'apparecchio dopo aver rimosso la scatola esterna. In questo caso eseguire i tre controlli sopra citati e quindi scollegare i connettori dal primario del trasformatore. Assicurarsi che tali connettori non vengano a contatto con altri componenti, ne con il telaio del forno (fare uso, se necessario, di nastro isolante). Al termine dell'intervento, eseguire nuovamente i tre controlli e ricollegare i conduttori al primario del trasformatore.

QUATTRO VERIFICHE IMPORTANTI DA NON DIMENTICARE

1) Ricollegare tutti i conduttori staccati dai vari componenti durante l'intervento.
2) Rimontare la scatola esterna.
3) Ripristinare l'alimentazione elettrica.
4) Rimettere in funzione il forno. Controllare tutte le funzioni.

I forni a microonde non devono mai funzionare a vuoto. Per verificare la presenza di energia da microonde all'interno di una cavitá, mettere una tazza di acqua fredda sul piatto rotante del forno, chiudere la porta, regolare la potenza su HIGH ed impostate il temporizzatore su due (2) minuti. Trascorsi i due minuti (temporizzatore a zero), controllare accuratamente che ora l'acqua sia calda. Se l'acqua è rimasta fredda, eseguire i tre controlli iniziali e verificare nuovamente i collegamenti del componente in questione.

Dopo aver portato a termine le operazioni di manutenzione e rimontato il forno, è necessario controllare la potenza delle microonde emesse ed eseguire un test per verificare che non vi sia alcuna dispersione.

PRODUCT DESCRIPTION

SPECIFICATION

ITEM	DESCRIPTION
Power Requirements	230 Volts 50 Hertz Single phase, 3 wire earthed
Power Consumption	1.18 kW
Power Output	800 W nominal of RF microwave energy (measured by method of IEC 60705) Operating fequency 2450 MHz
Case Dimensions	Width 460 mm Height 275 mm including foot Depth 353 mm
Cooking Cavity Dimensions	Width 322 mm Height 187 mm Depth 336 mm
Turntable diameter	272 mm
Control Complement	Timer (0 - 30 minutes) Microwave Power for Variable Cooking Repetition Rate; 800W ..... Full power throughout the cooking time 560W ..... approx. 70% of Full Power 400W ..... approx. 50% of Full Power 240W ..... approx. 30% of Full Power 80W ..... approx. 10% of Full Power
Set Weight	Approx. 12 kg

GENERAL INFORMATION

WARNING

THIS APPLIANCE MUST BE EARTHED

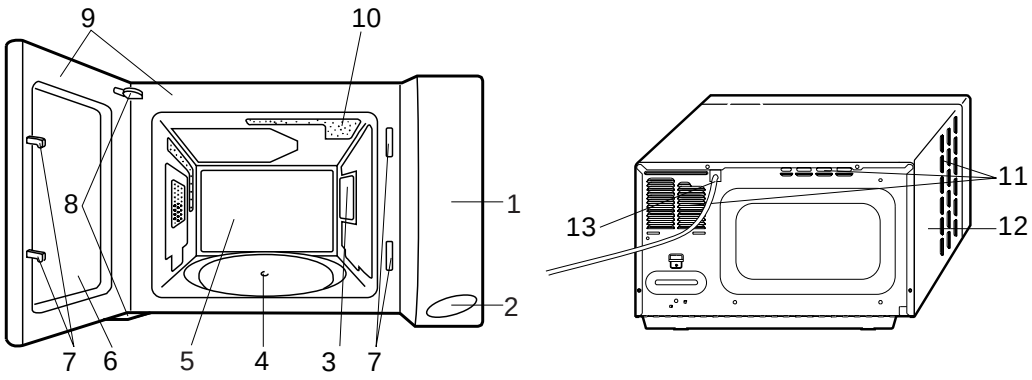
IMPORTANT

THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE:

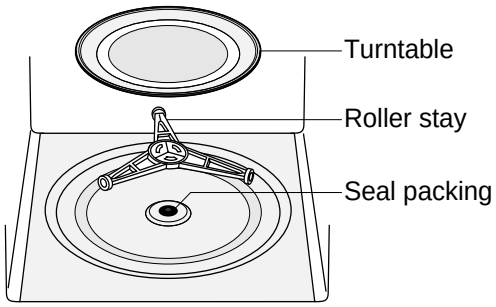
GREEN-AND-YELLOW	: EARTH
BLUE	: NEUTRAL
BROWN	: LIVE

APPEARANCE VIEW

OVEN

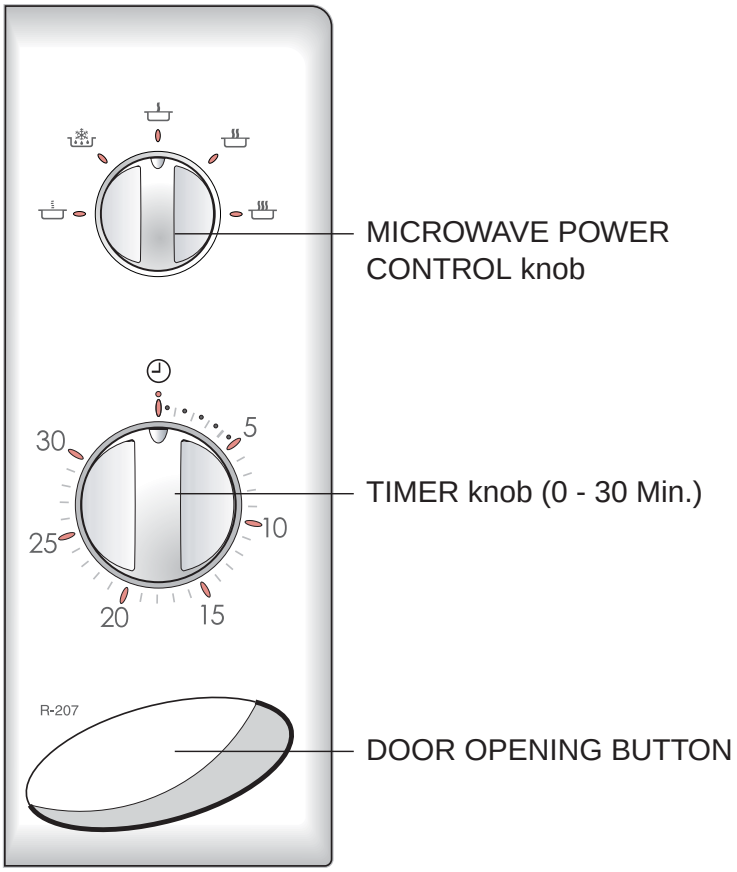


1. Control panel
2. Door opening button
3. Waveguide cover
4. Seal packing
5. Oven cavity
6. Door
7. Door safety latch
8. Door hinges
9. Door seals and sealing surfaces
10. Oven lamp
11. Ventilation openings
12. Outer case
13. Power cord



1. Place the roller stay on the floor of the oven cavity, engaging shaft into turntable motor shaft.
2. Then place the turntable on the roller stay.

CONTROL PANEL



OPERATION SEQUENCE

OFF CONDITION

1. When the timer knob is at "◴", the oven is OFF condition.
2. Closing the oven door activates the monitored latch switch and the latch switch.

IMPORTANT
When the oven door is closed, the contacts (COM-NC) of the monitor switch SW2 must be open.
When the microwave oven is plugged in a wall outlet, rated voltage is supplied to the noise filter and the control unit.

Figure O-1 on page 25

MICROWAVE COOKING CONDITION

HIGH COOKING

Set the Microwave power control knob to 800W and then set the timer.

Function sequence

Figure O-2 on page 25

1. Following components are energized.

High voltage rectifier	High voltage transformer	
High voltage capacitor	High voltage fuse	
Turntable motor	Timer motor	Fan motor
Magnetron	Oven lamp	Control unit

CONNECTED COMPONENTS	RELAY
High voltage transformer	RY1

2. Rated voltage is supplied to the primary winding of the high voltage transformer T. The voltage is converted to about 3.3 volts A.C. output on the filament winding and high voltage of approximately 2000 volts A.C. on the secondary winding.
3. The filament winding voltage (3.3 volts) heats the magnetron filament and the high voltage (2000 volts) is sent to the voltage doubling circuit, where it is doubled to negative voltage of approximately 4000 volts D.C..
4. The 2450 MHz microwave energy produced in the magnetron MG generates a wave length of 12.24 cm. This energy is channelled through the waveguide (transport channel) into the oven cavity, where the food is placed to be cooked.
5. When the cooking time is up, the timer returns to "◴", the bell rings and the contacts of the timer switch are opened. The following components are turned off.

High voltage rectifier	High voltage transformer	
High voltage capacitor	High voltage fuse	
Turntable motor	Timer motor	Fan motor
Magnetron	Oven lamp	Control unit

6. When the oven door is opened during a cook cycle, the switches come to the following position and they are common to the other cooking conditions too.

		CONDITION	
		DURING	DOOR OPEN
SWITCH	CONTACT	COOKING	(NO COOKING)
Monitored latch switch	COM-NO	Closed	Open
Latch switch	COM-NO	Closed	Open
Monitor switch	COM-NC	Open	Closed

The circuits to the high voltage transformer T, turntable motor TTM, timer motor TM, fan motor FM, oven lamp OL and control unit are cut off when the contacts (COM-NO) of the monitored latch switch SW1 and latch switch SW3 are made open.
The timer stops to indicate how much cooking time remains.

7. MONITOR SWITCH CIRCUIT
The monitor switch SW2 is mechanically controlled by oven door, and monitors the operation of the monitored latch switch SW1.

7-1 When the oven door is opened during or after the cycle of a cooking program, the monitored latch switch SW1 and latch switch SW3 must open their contacts (COM-NO) first. After that the contacts (COM-NC) of the monitor switch SW2 can be closed.

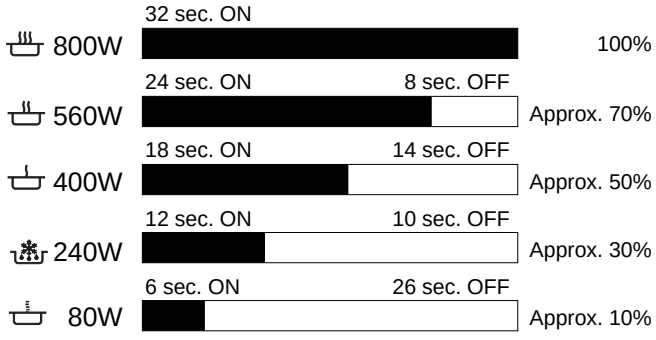
7-2. When the oven door is closed, the contacts (COM-NC) of the monitor switch SW2 must be opened first. And then the contacts (COM-NO) of the monitored latch switch SW1 and the latch switch SW3 are closed.

7-3. When the oven door is opened and the contacts (COM-NO) of the monitored latch switch SW1 and contacts of the timer switch remain closed. The fuse F1 T6.3A will blow, because the monitor switch is closed and a short circuit is caused.

POWER LEVEL COOKING

When the microwave oven is preset for variable cooking power, rated voltage is supplied to the high voltage transformer intermittently within a 32-second time base through the relay contact which is coupled with the current-limiting relay. The following levels of microwave power are given.

SETTING;



NOTE: The ON/OFF time ratio does not exactly correspond to the percentage of microwave power, because approx. 3 seconds are needed for heating up the magnetron filament.

POWER OUTPUT REDUCTION

1. If the oven is set for more than 20 minutes at 800W, after the first 20 minutes the power level will automatically adjust itself to 70% power to avoid overcooking.
2. If the oven is operated for more than 90 minutes continuously (at any power levels), the relay RY1 opens. And the circuit to the high voltage transformer will be cut off.

FUNCTION OF IMPORTANT COMPONENTS

DOOR OPEN MECHANISM

The door is opened by pushing the open button on the control panel, refer to the Figure D-1.
When the open button is pushed, the open button pushes up the switch lever, and then the switch lever pushes up the latch head. The latch heads are moved upward and released from latch hook. Now the door will open.

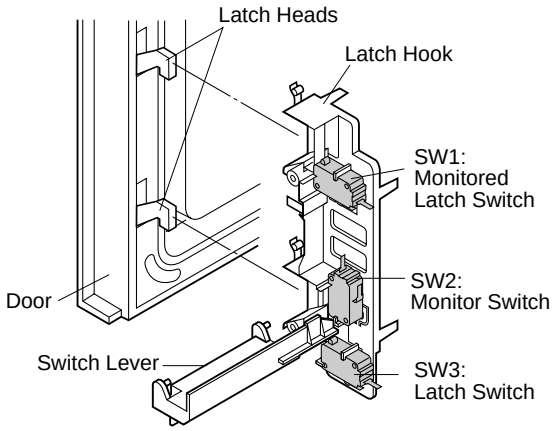


Figure D-1. Door Open Mechanism

MONITORED LATCH SWITCH SW1 AND LATCH SWITCH SW3

1. When the oven door is closed, the contacts (COM-NO) must be closed.

MONITOR SWITCH SW2

1. When the oven door is closed, the contacts (COM-NC) must be opened.
2. When the oven door is opened, the contacts (COM-NC) must be closed.
3. If the oven door is opened and he contacts (COM-NO) of the moniored latch switch SW1 fail to open, the fuse F1 T6.3A blows immediately after closing the contacts (COM-NC) of the monitor switch SW2.

CAUTION: BEFORE REPLACING A BLOWN FUSE F1 TEST MONITORED LATCH SWITCH SW1 AND MONITOR SWITCH SW2 FOR PROPER OPERATION. (REFER TO CHAPTER “TEST PROCEDURE”).

FUSE F1 T6.3A

1. The fuse F1 T6.3A blows when the contacts (COM-NO) of the monitored latch switch SW1 remain closed with the oven door open and when the contacts (COM-NC) of the monitor switch SW2 are closes.
2. If the wire harness or electrical components are short-circuited, the fuse F1 T6.3A blows to prevent an electric shock or fire hazard.

HIGH VOLTAGE FUSE F2

The high voltage fuse blows when the high voltage rectifier or the magnetron is shorted.

TEMPERATURE FUSE TF

The temperature fuse, located on the top of the oven cavity, is designed to prevent damage to the oven by fire. If the food load is overcooked, by either error in cook time or defect in the control unit, the temperature fuse will open. Under normal operation, the temperature fuse remains closed. However, when abnormally high temperatures are reached within the oven cavity, the temperature fuse will open at 248˚F(120˚C), causing the oven to shut down.

TURNTABLE MOTOR TTM

The turntable motor drives the turntable roller assembly to rotate the turntable.

FAN MOTOR FM

The fan motor drives a blade which draws external cool air. This cool air is directed through the air vents surrounding the magnetron and cools the magnetron. This air is channelled through the oven cavity to remove steam and vapours given off from heating food. It is then exhausted through the exhausting air vents at the rear of the oven cavity.

TIMER MOTOR TM

Timer switch

1. When the timer switch is at "◴" position, the switch of the timer is opened.
2. When the timer is turned clockwise from "◴" position, the switch of the timer is closed.

NOISE FILTER

The noise filter assembly prevents radio frequency interference that might flow back in the power circuit.

TROUBLESHOOTING GUIDE

When troubleshooting the microwave oven, it is helpful to follow the Sequence of Operation in performing the checks. Many of the possible causes of trouble will require that a specific test be performed. These tests are given a procedure letter which will be found in the "Test Procedure" section.

IMPORTANT: If the oven becomes inoperative because of a blown fuse F1 T6.3A in the monitored latch switch SW1 - timer switch - monitor switch circuit, check the monitored latch switch SW1, timer switch and monitor switch SW2 before replacing the fuse F1 T6.3A.

CK = Check / RE = Replace

CONDITION	PROBLEM \ TEST PROCEDURE	A	B	C	CK	D	E	E	E	F	K	K	I	I	G	L	M	N	RE	CK	CK	RE	CK	CK	CK	CK	CK	H	J
	POSSIBLE CAUSE AND DEFECTIVE PARTS	MAGNETRON	HIGH VOLTAGE TRANSFORMER	H.V. RECTIFIER ASSEMBLY	HIGH VOLTAGE WIRE	HIGH VOLTAGE CAPACITOR	MONITORED LATCH SWITCH SW1	LATCH SWITCH SW3	MONITOR SWITCH SW2	TEMPERATURE FUSE TF	TIMER MOTOR	TIMER SWITCH	FAN MOTOR	TURNTABLE MOTOR	FUSE F1 T6.3A	CONTROL UNIT	RELAY (RY-1)	FOIL PATERN ON P.W.B.	POWER SUPPLY CORD	SHORTED WIRE HARNESS	OPENED WIRE HARNESS	OVEN LAMP	WALL OUTLET	MISADJUSTMENT SWITCH	HOME FUSE OR BREAKER	BLOCKED COOLING FAN	BLOCKED VENTILATION	NOISE FILTER	H.V. FUSE F2
OFF CONDITION	Home fuse blows when power supply cord is plugged into wall outlet.																		○	○					○				
	FUSE F1 T6.3A blows when power supply cord is plugged into wall outlet.						○		○			○			○					○				○				○	
ON CONDITION	Oven does not start when the timer is set.						○	○		○		○			○	○	○				○			○				○	
	Oven lamp does not light (Other function is normal.)																				○	○							
	Fan motor does not operate. (Other function is normal.)							○					○								○			○		○			
	Turntable motor does not operate. (Other function is normal.)													○							○								
	Oven or any electrical parts does not stop.										○	○				○	○												
	Oven seems to be operating but little or no heat is produced in oven load. (Microwave power level is set at 800W)	○	○	○	○	○										○	○				○								○
	Oven does not seems to be operating properly when 560W, 400W, 240W or 80W is set. (Oven operates properly at 800W.)															○	○												
	Oven goes into cook cycle but shuts down before end of cooking cycle.									○																○	○		

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

A **MAGNETRON TEST**

NEVER TOUCH ANY PART IN THE CIRCUIT WITH YOUR HAND OR AN INSULATED TOOL WHILE THE OVEN IS IN OPERATION.

CARRY OUT 3D CHECKS.

Isolate the magnetron from the high voltage circuit by removing all leads connected to the filament terminal.

To test for an open circuit filament use an ohmmeter to make a continuity test between the magnetron filament terminals, the meter should show a reading of less than 1 ohm.

To test for a short circuit filament to anode condition, connect ohmmeter between one of the filament terminals and the case of the magnetron (ground). This test should be indicated an infinite resistance. If a low or zero resistance reading is obtained then the magnetron should be replaced.

MICROWAVE OUTPUT POWER (IEC60705)

The following test procedure should be carried out with the microwave oven in a fully assembled condition (outer case fitted). Microwave output power from the magnetron can be measured by IEC test procedure, i.e. it can be measured by using water load how much it can be absorbed by the water load. To measure the microwave output power in the microwave oven, the relation of calorie and watt is used. When P(W) heating works for t(second), approximately P x t/4.187 calorie is generated. On the other hand, if the temperature of the water with V(ml) rises ΔT (˚C) during this microwave heating period, the calorie of the water is V x ΔT.

The formula is as follows;

$P \times t / 4.187 = V \times \Delta T + 0.55 \times mc (T2-T0)/4.187$ $\quad P (W) = 4.187 \times V \times \Delta T / t + 0.55 \times mc (T2-T0)/t$

Our condition for water load is as follows:

Room temperature (T0) ... around 20°C	Power supply Voltage ..... Rated voltage
Water load ..... 1000 g	Initial temperature (T1) ..... 10±1°C
Heating time ..... 52 sec.	Mass of container (mc) ..... 330 g
T2 ..... Final Temperature	P = 80 x ΔT + 0.55 x mc (T2-T0)/52

Measuring condition:

1. Container
   The water container must be a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.
2. Temperature of the oven and vessel
   The oven and the empty vessel are at ambient temperature prior to the start of the test.
3. Temperature of the water
   The initial temperature of the water is (10±1)˚C.
4. Select the initial and final water temperature so that the maximum difference between the final water temperature and the ambient temperature is 5˚C.
5. Select stirring devices and measuring instruments in order to minimize addition or removal of heat.
6. The graduation of the thermometer must be scaled by 0.1˚C at minimum and an accurate thermometer.
7. The water load must be (1000±5) g.
8. “t” is measured while the microwave generator is operating at full power. Magnetron filament heat-up time is not included.

NOTE: The operation time of the microwave oven is “t + 3” sec. 3 sec. is magnetron filament heat-up time.

Measuring method:

1. Measure the initial temperature of the water before the water is added to the vessel. (Example: The initial temperature T1 = 11˚C)
2. Add the 1 litre water to the vessel.
3. Place the load on the centre of the shelf.
4. Operate the microwave oven at HIGH for the temperature of the water rises by a value Δ T of 10 ˚C.
5. Stir the water to equalize temperature throughout the vessel.
6. Measure the final water temperature. (Example: The final temperature T2 = 21°C)
7. Calculate the microwave power output P in watts from above formula.

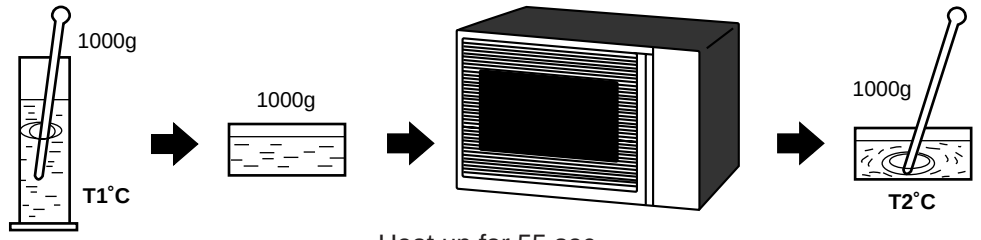
TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

Room temperature ..... To = 21˚C Initial temperature ..... T1 = 11°C
Temperature after (52 + 3) = 55 sec. ..... T2 = 21°C
Temperature difference Cold-Warm ..... ΔT1 = 10°C
Measured output power
The equation is "P = 80 x ΔT" ..... P = 80 x 10°C = 800 Watts

JUDGEMENT: The measured output power should be at least ± 15 % of the rated output power.

CAUTION: 1°C CORRESPONDS TO 80 WATTS. REPEAT MEASUREMENT IF THE POWER IS INSUFFICIENT.



Heat up for 55 sec.

B HIGH VOLTAGE TRANSFORMER TEST

WARNING: High voltage and large currents are present at the secondary winding and filament winding of the high voltage transformer. It is very dangerous to work near this part when the oven is on. NEVER make any voltage measurements of the high-voltage circuits, including the magnetron filament.

CARRY OUT 3D CHECKS.
Disconnect the leads to the primary winding of the high voltage transformer. Disconnect the filament and secondary winding connections from the rest of the HV circuitry. Using an ohmmeter, set on a low range, it is possible to check the continuity of all three winding. The following readings should be obtained:-

a. Primary winding ..... 2.7 ohms approximately
b. Secondary winding ..... 205 ohms approximately
c. Filament winding ..... less than 1 ohm

If the readings obtained are not stated as above, then the high voltage transformer is probably faulty and should be replaced.
CARRY OUT 4R CHECKS.

C HIGH VOLTAGE RECTIFIER TEST

CARRY OUT 3D CHECKS.
Isolate the high voltage rectifier assembly from the HV circuit. The high voltage rectifier can be tested using an ohmmeter set to its highest range. Connect the ohmmeter across the terminal of the high voltage rectifier and note the reading obtained. Reverse the meter leads and note this second reading. The normal resistance is infinite in one direction and more than 100 kΩ in the other direction.

CARRY OUT 4R CHECKS.

NOTE: FOR MEASUREMENT OF THE RESISTANCE OF THE RECTIFIER, THE BATTERIES OF THE MEASURING INSTRUMENT MUST HAVE A VOLTAGE AT LEAST 6 VOLTS, BECAUSE OTHERWISE AN INFINITE RESISTANCE MIGHT BE SHOWN IN BOTH DIRECTIONS.

D HIGH VOLTAGE CAPACITOR TEST

CARRY OUT 3D CHECKS.

A. Isolate the high voltage capacitor from the circuit.
B. Continuity check must be carried out with measuring instrument which is set to the highest resistance range.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

C. A normal capacitor shows continuity for a short time (kick) and then a resistance of about 10MΩ after it has been charged.
D. A short-circuited capacitor shows continuity all the time.
E. An open capacitor constantly shows a resistance about 10 MΩ because of its internal 10MΩ resistance.
F. When the internal wire is opened in the high voltage capacitor, the capacitor shows an infinite resistance.
G. The resistance across all the terminals and the chassis must be infinite when the capacitor is normal.

If incorrect reading are obtained, the high voltage capacitor must be replaced.

CARRY OUT 4R CHECKS.

E SWITCH TEST

CARRY OUT 3D CHECKS.
Isolate the switch to be tested and using an ohmmeter check between the terminals as described in the following table.

Table: Terminal Connection of Switch

Plunger Operation	COM to NO	COM to NC
Released	Open circuit	Short circuit
Depressed	Short circuit	Open circuit

COM; Common terminal,
NO; Normally open terminal
NC; Normally close terminal

If incorrect readings are obtained, make the necessary switch adjustment or replace the switch.

CARRY OUT 4R CHECKS.

F TEMPERATURE FUSE TEST

CARRY OUT 3D CHECKS.

A continuity check across the temperature fuse terminals should indicate a closed circuit unless the temperature of the temperature fuse reaches approximately 248˚F(120˚C).

An open temperature fuse indicates overheating of the oven, exchange the temperature fuse and check inside of oven cavity and for improper setting of cooking time or operation of control unit. Check for restricted air flow through the vent holes of the oven cavity, especially the cooling fan and air guide.

CARRY OUT 4R CHECKS.

G BLOWN FUSE F1

CARRY OUT 3D CHECKS.

1. If the fuse F1 is blown, there could be a shorts or grounds in electrical parts or wire harness. Check them and replace the defective parts or repair the wire harness.
2. If the fuse F1 is blown when the door is opened, check the monitored latch switch SW1, monitor switch SW2, timer switch and relay RY1.

   If the fuse F1 is blown by incorrect door switching replace the defective switch(es) and the fuse F1.

CARRY OUT 4R CHECKS.

CAUTION: Only replace fuse with the correct value replacement.

H NOISE FILTER TEST

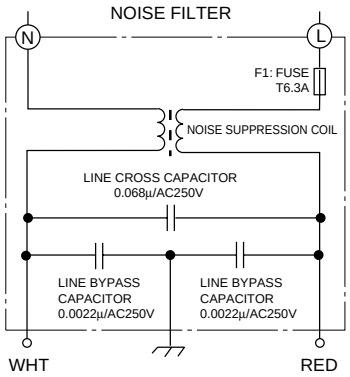
CARRY OUT 3D CHECKS.

Disconnect the leads from the terminals of noise filter.
Using an ohmmeter, check between the terminals as described in the following table.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

MEASURING POINTS	INDICATION OF OHMMETER
Between N and L	Open circuit
Between terminal N and WHITE	Short circuit
Between terminal L and RED	Short circuit



If incorrect readings are obtained, replace the noise filter unit.

CARRY OUT 4R CHECKS.

I MOTOR WINDING TEST

CARRY OUT 3D CHECKS.

Disconnect the leads from the motor. Using an ohmmeter, check the resistance between the two terminals as described in the table below.

Table: Resistance of Motor

Motors	Resistance
Fan motor	Approximately 400 Ω
Turntable motor	Approximately 14.8 kΩ

If incorrect readings are obtained, replace the motor.
CARRY OUT 4R CHECKS.

J HIGH VOLTAGE FUSE F2 TEST

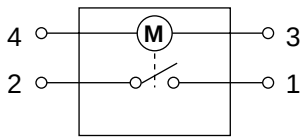
CARRY OUT 3D CHECKS.
If the high voltage fuse is blown, there could be a short in the high voltage rectifier or the magnetron. Check them and replace the defective parts and the high voltage fuse.

CARRY OUT 4R CHECKS.

CAUTION: ONLY REPLACE HIGH VOLTAGE FUSE WITH THE CORRECT VALUE REPLACEMENT.

K TIMER MOTOR TEST

CARRY OUT 3D CHECKS before any of the following timer tests.



TIMER SWITCH- CONTACTS
Disconnect the leads from terminals described at following table. Connect an ohmmeter across terminals described at following table.
Advance the timer and check that a short circuit reading is obtained on the meter.
Turn the timer back to the zero (0) position and check that an open circuit reading is obtained on the meter. If these readings are not obtained then replace the timer.

Disconnecting and checking terminals	1 and 2

TIMER - MOTOR
Disconnect the leads from terminals described at following table. Connect an ohmmeter across the timer motor winding, terminals are described at following table, and check that a reading of resistance described at following table is indicated.
If this reading is not obtained then the timer is probably defective and should be replaced.

Disconnecting and checking terminals	3 and 4
Resistance of motor winding	approximately 22.2 kohms

CARRY OUT 4R CHECKS after any of the above tests.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

L CONTROL UNIT TEST

CAUTION: DO NOT TOUCH THE ELECTRICAL PARTS AND THE PRINTED WIRING BOARD TO PREVENT AN ELECTRIC SHOCK. BECAUSE THE CONTROL UNIT IS " TRANSLESS CIRCUIT " AND ALL ELECTRICAL PARTS ARE USED AT A.C. LINE VOLTAGE.

The control unit consists of circuits including semiconductors such as LSI, etc. Therefore, unlike conventional microwave ovens, proper maintenance can not be performed with only a voltmeter and ohmmeter. In this service manual, troubleshooting by unit replacement is described according to the symptoms indicated.
Control unit.
The following symptoms indicate a defective control unit.

a) When rotating the potentiometer, the power level can not be selected.
b) Cooking is not possible.

M RELAY TEST

CARRY OUT 3D CHECKS.

Remove the outer case and check voltage between Pin No. 3 of the 2 pin connector (A) and the common terminal of the relay RY1 on the control unit with an A.C. voltmeter.
The meter should indicate 230 volts, if not check oven circuit.

Relay Test
Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation.
DC. voltage indicated ..... Defective relay.
DC. voltage not indicated .... Check diode which is connected to the relay coil. If diode is good, control unit is defective.

RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS
RY1	Approx. 12.0V D.C.	Oven lamp / Turntable motor / Fan motor
RY2	Approx. 11.0V D.C.	High voltage transformer

CARRY OUT 4R CHECKS.

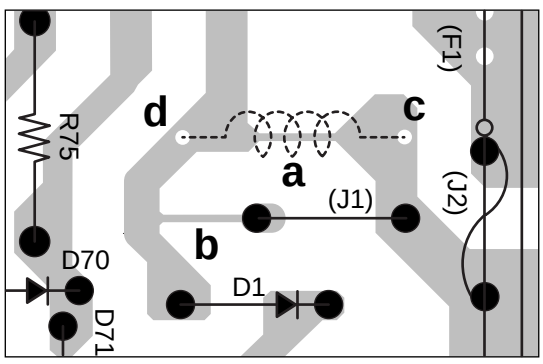
N PROCEDURES TO BE TAKEN WHEN THE FOIL PATTERN ON THE PRINTED WIRING BOARD (PWB) IS OPEN

To protect the electronic circuits, this model is provided with a fine foil pattern added to the input circuit on the PWB, this foil pattern acts as a fuse. If the foil pattern is open, follow the troubleshooting guide given below for repair.
Problem: POWER ON.
CARRY OUT 3D CHECKS.

STEPS	OCCURRENCE	CAUSE OR CORRECTION
1	The rated voltage is not applied between Pin No. 3 of the 2 pin connector (A) and the common terminal of the relay RY1.	Check supply voltage and oven power cord.
2	Only pattern at "a" is broken.	*Insert jumper wire J1 and solder.
3	Pattern at "a" and "b" are broken.	*Insert the coil RCILF2003YAZZ between "c" and "d".

NOTE: *At the time of making these repairs, make a visual inspection of the varistor. Check for burned damage. If any abnormal condition is detected, replace the defective parts.

CARRY OUT 4R CHECKS.



CONTROL UNIT ASSEMBLY

OUTLINE OF CONTROL UNIT

The control unit consists of the following circuits as shown in the control unit circuit.
The principal functions of these circuits and their related signals are explained below.

Control Unit

Control unit consists of LSI, reset circuit, power source circuit, relay circuit and synchronizing signal circuit.

1) Reset Circuit

This circuit generates a signal which resets the LSI to the initial state when power is supplied.

2) Potentiometer Circuit

The circuit makes setting of the power level by variable resistance.

3) Power Source Circuit

This circuit generates voltage necessary in the control unit from the AC line voltage. In addition, the synchronizing signal is available in order to compose a basic standard time in the clock circuit.

Symbol	Voltage	Application
VDD	+5V	LSI(IC-1)
VSS	0V	LSI(IC-1)

4) Relay Circuit

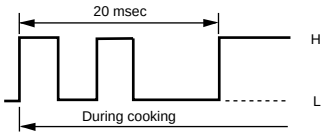
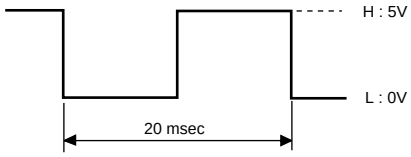
To drive the magnetron, fan motor, turntable motor and light the oven lamp.

5) Synchronizing Signal Circuit

The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit. It accompanies a very small error because it works on commercial frequency.

DESCRIPTION OF LSI

The I/O signal of the LSI are detailed in the following table.

Pin No.	Signal	I/O	Description
1	VDD	IN	**Power source voltage: 5V.** Connected to 5V.
2	VSS	IN	**Power source voltage: 0V.** Connected to 0V.
3	XIN	IN	**Internal clock oscillation frequency input setting.** The internal clock frequency is generated by connecting the capacitor and resistor to XIN.
4	XOUT	OUT	Terminal not used.
5	CNVSS	IN	Connected to VSS through resistor.
6	$\overline{\text{RESET}}$	IN	**Auto clear terminal.** Signal is inputted to reset the LSI to the initial state when power is supplied.
7	AIN1	IN	**Signal coming from potentiometer.** Voltage from potentiometer is converted into the power level by the A/D converter built into the LSI.
8	AIN0	IN	**Cooking start detection terminal.** When "H" level is inputted to AIN0, cooking starts.
9	D3	OUT	**Signal to allow Magnetron high-voltage circuit to be drived.** While the signal (Sqrare Waveform) is generating from D3, the Magnetron high-voltage circuit is allowed to be drived. 
10	D2	OUT	**Signal to check the model.**
11	D1	OUT	**Magnetron high-voltage circuit driving signal.** To turn on and off the cook relay (RY1). The signal holds "L" level during microwave cooking and "H" level while not cooking. In other cooking modes (70%, 50%, 30%, 10%) the signal turns to "H" level and "L" level in repetition according to the power level. ON/OFF time ratio in Micro cooking (a. 32second time base) MICRO COOK / ON / OFF 100% / 32sec. / 0sec. 70% / 24sec. / 8sec. 50% / 18sec. / 14sec. 30% / 12sec. / 20sec. 10% / 6sec. / 26sec.
12	D0	OUT	Terminal not used.
13	INT	IN	**Signal to synchronize LSI with commercial power source frequency.** This is basic timing for all real time processing of LSI. 
14-16	P12-P10	OUT	Terminal not used.
17-20	P03-P00	IN	**Terminal to change the Models and functions.**

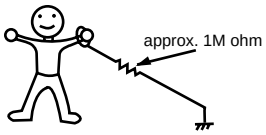
SERVICING

1. Precautions for Handling Electronic Components

This unit uses CMOS LSI in the integral part of the circuits. When handling these parts, the following precautions should be strictly followed. CMOS LSI have extremely high impedance at its input and output terminals. For this reason, it is easily influenced by the surrounding high voltage power source, static electricity charge in clothes, etc., and sometimes it is not fully protected by the built-in protection circuit.

In order to protect CMOS LSI.

1) When storing and transporting, thoroughly wrap them in aluminium foil. Also wrap PW boards containing them in aluminium foil.
2) When soldering, ground the technician as shown in the figure and use grounded soldering iron and work table.



2. Servicing of Touch Control Panel

We describe the procedures to permit servicing of the touch control panel of the microwave oven and the precautions you must take when doing so.

To perform the servicing, power to the touch control panel is available either from the power line of the oven itself or from an external power source.

(1) Servicing the touch control panel with power supply of the oven :

CAUTION:
THE HIGH VOLTAGE TRANSFORMER OF THE MICROWAVE OVEN IS STILL LIVE DURING SERVICING AND PRESENTS A HAZARD .

Therefore, when checking the performance of the touch control panel, put the outer cabinet on the oven to avoid touching the high voltage transformer, or unplug the primary terminal (connector) of the high voltage transformer to turn it off; the end of such connector must be insulated with an insulating tape. After servicing, be sure to replace the leads to their original locations.

A. On some models, the power supply cord between the touch control panel and the oven itself is so short that the two can't be separated.

For those models, check and repair all the controls (sensor-related ones included) of the touch control panel while keeping it connected to the oven.

B. On some models, the power supply cord between the touch control panel and the oven proper is so long enough that they may be separated from each other. For those models, therefore, it is possible to check and repair the controls of the touch control panel while keeping it apart from the oven proper; in this case you must short both ends of the door sensing switch (on PWB) of the touch control panel with a jumper, which brings about an operational state that is equivalent to the oven door being closed.

As for the sensor-related controls of the touch control panel, checking them is possible if the dummy resistor(s) with resistance equal to that of the controls are used.

(2) Servicing the touch control panel with power supply from an external power source:

Disconnect the touch control panel completely from the oven proper, and short both ends of the door sensing switch (on PWB) of the touch control panel, which brings about an operational state that is equivalent to the oven door being closed. Connect an external power source to the power input terminal of the touch control panel, then it is possible to check and repair the controls of the touch control panel; it is also possible to check the sensor-related controls of the touch control panel by using the dummy resistor(s).

3. Servicing Tools

Tools required to service the touch control panel assembly.

1) Soldering iron: 30W
(It is recommended to use a soldering iron with a grounding terminal.)
2) Oscilloscope: Single beam, frequency range: DC - 10MHz type or more advanced model.
3) Others: Hand tools

4. Other Precautions

1) Before turning on the power source of the control unit, remove the aluminium foil applied for preventing static electricity.
2) Connect the connector of the key unit to the control unit being sure that the lead wires are not twisted.
3) After aluminium foil is removed, be careful that abnormal voltage due to static electricity etc. is not applied to the input or output terminals.
4) Attach connectors, electrolytic capacitors, etc. to PWB, making sure that all connections are tight.
5) Be sure to use specified components where high precision is required.

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

WARNING: Avoid possible exposure to microwave energy. Please follow the instructions below before operating the oven.

1. Disconnect oven from power supply.
2. Make sure that a definite" click" can be heard when the microwave oven door is unlatched. (Hold the door in a closed position with one hand, then push the door open button with the other, this causes the latch leads to rise, it is then possible to hear a "click' as the door switches operate.)
3. Visually check the door and cavity face plate for damage (dents, cracks, signs of arcing etc.).

Carry out any remedial work that is necessary before operating the oven.
Do not operate the oven if any of the following conditions exist;

1. Door does not close firmly.
2. Door hinge, support or latch hook is damaged.
3. The door gasket or seal is damaged.
4. The door is bent or warped.
5. There are defective parts in the door interlock system.
6. There are defective parts in the microwave generating and transmission assembly.
7. There is visible damage to the oven.

Do not operate the oven:
1. Without the RF gasket (Magnetron).
2. If the wave guide or oven cavity are not intact.
3. If the door is not closed.
4. If the outer case (cabinet) is not fitted.

Please refer to 'OVEN PARTS, CABINET PARTS, CONTROL PANEL PARTS, DOOR PARTS', when carrying out any of the following removal procedures:

WARNING FOR WIRING

To prevent an electric shock, take the following manners.

1. Before wiring,
   1) Disconnect the power supply.
   2) Open the door and wedge the door open.
   3) Discharge the high voltage capacitor and wait for 60 seconds.
2. Don't let the wire leads touch to the following parts;
   1) High voltage parts:
      Magnetron, High voltage transformer, High voltage capacitor, High voltage rectifier assembly and High voltage fuse.
   2) Hot parts:
      Oven lamp, Magnetron, High voltage transformer and Oven cavity.
   3) Sharp edge:
      Oven cavity, Waveguide flange, other metallic plate.
   4) Movable parts (to prevent a fault)
      Fan blade, Fan motor, Switch, Turntable motor and Timer motor.
3. Do not catch the wire leads in the outer case cabinet.
4. Insert the positive lock connector certainly until its pin is locked. And make sure that the wire leads should not come off even if the wire leads is pulled.
5. To prevent an error function, connect the wire leads correctly, referring to the Pictorial Diagram.

REMEMBER TO CHECK 3D

1) Disconnect the supply.
2) Door opened, and wedged open.
3) Discharge high voltage capacitor.

OUTER CASE REMOVAL

To To remove the outer case, procedure as follows.
1. Disconnect the power supply cord.
2. Open the oven door and block it open.
3. Remove the two (2) screws along the right side of the outer case.
4. Remove the remaining five (5) screws from the rear of the outer case.
5. Slide the entire outer case back out about 1 inch (3 cm) to free it from retaining clips on the cavity face plate.
6. Lift entire outer case from the unit.
7. Discharge the H. V. capacitor before curring out any further work.
8. Do not operate the oven with the outer case removed.

NOTE: Step 1, 2 and 7 form the basis of the 3D checks.

CAUTION:1. DISCONNECT OVEN FROM POWER SUPPLY BEFORE REMOVING OUTER CASE.

2. DISCHARGE THE HIGH VOLTAGE CAPACITOR BEFORE TOUCHING ANY OVEN COMPONENTS OR WIRING.

MAGNETRON REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect the wire leads from magnetron.
3. Remove the three (3) screws holding the magnetron to the waveguide.
4. Remove the magnetron from waveguide.
5. Now, the magnetron is free.

CAUTION: WHEN REPLACING THE MAGNETRON, BE SURE THE R.F. GASKET IS IN PLACE AND THE MAGNETRON MOUNTING SCREWS ARE TIGHTENED SECURELY.

HIGH VOLTAGE COMPONENTS REMOVAL (HIGH VOLTAGE CAPACITOR AND HIGH VOLTAGE RECTIFIER ASSEMBLY)

To remove the components, proceed as follows.

1. CARRY OUT 3D CHECKS.
2. Remove one (1) screw holding capacitor holder to rear cabinet.
3. Disconnect the H.V. wire of the H.V. rectifier assembly from the magnetron.
4. Disconnect the filament lead of the high voltage transformer from the H.V. capacitor.
5. Remove one (1) screw holding ground side terminal of high voltage rectifier assembly, and remove capacitor holder.
6. Disconnect all the leads and terminals of high voltage rectifier assembly from high voltage capacitor.
7. Now the H.V. rectifier assembly and H.V. capacitor should be free.

CAUTION: WHEN REPLACING HIGH VOLTAGE RECTIFIER ASSEMBLY, ENSURE THAT THE CATHODE (GROUND) CONNECTION IS SECURELY FIXED TO THE CAPACITOR HOLDER WITH A GROUNDING SCREW.

CAUTION: DO NOT REPLACE ONLY HIGH VOLTAGE RECTIFIER. WHEN REPLACING IT, REPLACE HIGH VOLTAGE RECTIFIER ASSEMBLY.

HIGH VOLTAGE TRANSFORMER REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect the wire leads (main wire harness) from high voltage transformer.
3. Disconnect the lead from magnetron filament.
4. Disconnect the leads of the high voltage transformer from high voltage capacitor.
5. Remove the two (2) screws holding the transformer to bottom plate from the upper side.
6. Remove the remaining two (2) screws from the bottom.
7. Remove the transformer.
8. Now the high voltage transformer is free.

Re-install

1. Rest transformer on the bottom plate with its primary terminals toward the oven face plate.
2. Secure transformer with four (4) screws to the bottom plate.
3. Re-connect wire leads (primary and high voltage) and filament leads to the high voltage transformer, magnetron and high voltage capacitor, referring to "Pictorial Diagram".
4. Re-install outer case and check that the oven is operating properly.

POSITIVE LOCK® CONNECTOR (NO-CASE TYPE) REMOVAL

1. CARRY OUT 3D CHECKS.
2. Push the lever of positive lock® connector.
3. Pull down on the positive lock® connector.

CAUTION: WHEN CONNECTING THE POSITIVE LOCK® CONNECTORS TO THE TERMINALS, INSTALL THE POSITIVE LOCK® SO THAT THE LEVER FACES YOU

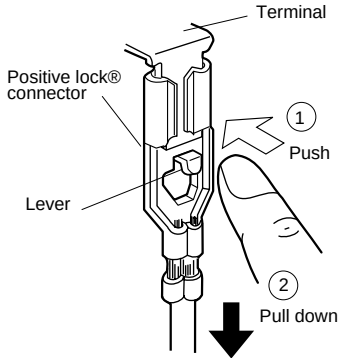


Figure C-1. Positive lock® connector

CONTROL PANEL ASSEMBLY REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect the leads from the control unit and the timer motor.
3. Remove the one (1) screw holding the control panel to the front plate of the oven cavity.
4. Now, the control panel assembly is free.

TURNTABLE MOTOR REMOVAL

Removal

1. Disconnect the oven from the power supply.
2. Remove the turntable and turntable support from the oven cavity.
3. Turn the oven over.
4. Remove the one (1) screw holding the turntable motor cover to the bottom plate.
5. Now, the turntable motor cover is free.
6. Disconnect the wire leads from the turntable motor.
7. Remove the single (1) screw holding the turntable motor to the oven cavity.
8. Remove the turntable motor from the oven cavity.
9. Remove the TTM packing from the turntable motor.
10. Now, the turntable motor is free.

Re-install

1. Re-install the TTM packing.
2. Re-install the turntable motor with theTTM packing with the single (1) screw.
3. Re-connect the wire leads to the turntable motor.
4. Insert the tab of the turntable motor cover into the hole of the bottom plate.
5. Re-install the turntable motor cover to the bottom plate with one (1) screw.

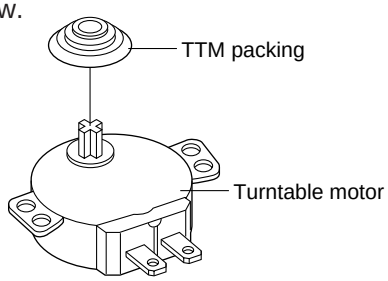


Figure C-2. TTM packing Installation

COOLING FAN MOTOR REMOVAL

REMOVAL

1. CARRY OUT 3D CHECKS.
2. Remove the magnetron from the waveguide. Refer to chapter "MAGNETRON REMOVAL"
3. Disconnect the wire leads from the fan motor.
4. Disconnect the wire lead from the disconnect the fan duct.
5. Remove the three (3) screws holding the fan duct to the oven cavity.
6. Release the fan motor assembly from the oven cavity.
7. Remove the fan blade from the fan motor shaft according to the following procedure.
8. Hold the edge of the rotor of the fan motor by using a pair of groove joint pliers.

CAUTION:

- **Make sure that any pieces do not enter the gap between the rotor and the stator of the fan motor. Because the rotor is easy to be shaven by pliers and metal pieces may be produced.**
- **Do not touch the pliers to the coil of the fan motor because the coil may be cut or injured.**
- **Do not disfigure the bracket by touching with the pliers.**

9. Remove the fan blade assembly from the shaft of the fan motor by pulling and rotating the fan blade with your hand.
10. Now, the fan blade will be free.

CAUTION:

- **Do not re-use the removed fan blade because the hole (for shaft) may be larger than normal.**

11. Remove the two (2) screws holding the fan motor to the fan duct.
12. Now, the fan motor is free.

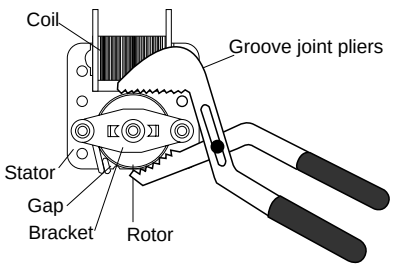
INSTALLATION

1. Install the fan motor to the fan duct with the two (2) screws.
2. Install the fan blade to the fan motor shaft according to the following procedure.
3. Hold the center of the bracket which supports the shaft of the fan motor on the flat table.
4. Apply the screw lock tight into the hole (for shaft) of the fan blade.
5. Install the fan blade to the shaft of fan motor by pushing the fan blade with a small, light weight, ball peen hammer or rubber mallet.

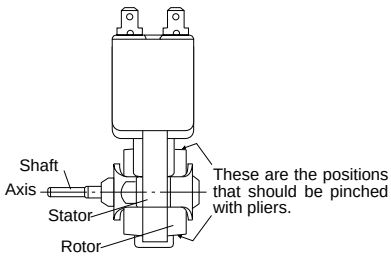
CAUTION:

- **Do not hit the fan blade strongly when installed because the bracket may be transformed.**
- **Make sure that the fan blade rotates smooth after installed.**
- **Make sure that the axis of the shaft is not slanted.**

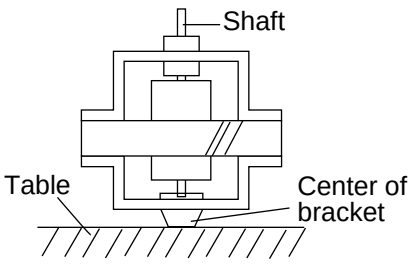
6. Install the fan motor assembly to the oven cavity with three (3) screws.
7. Install the magnetron with three (3) screws.
8. Re-install the wire leads of the fan duct.
9. Connect the wire leads to the magnetron and the fan motor, referring to the pictorial diagram.



Rear view



Side view



POWER SUPPLY CORD REPLACEMENT

Removal

1. CARRY OUT 3D CHECKS.
2. Remove the single (1) screw holding the green/yellow wire to the oven cavity.
3. Disconnect the leads of the power supply cord from the noise filter, referring to the Figure C-3 (a).
4. Release the moulding cord stopper of the power supply cord from the square hole of the oven cavity back plate, referring to the Figure C-3 (b).
5. Now, the power supply cord is free.

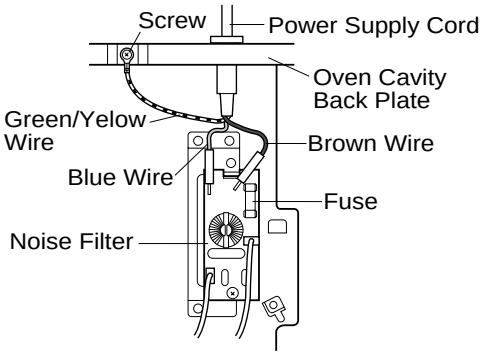


Figure C-3 (a). Power Supply Cord Replacement

Re-install

1. Insert the moulding cord stopper of power supply cord into the square hole of the rear cabinet, referring to the Figure C-3 (b).
2. Install the earth wire lead of power supply cord and the earth angle to the oven cavity with one (1) screw and tight the screw.
3. Connect the brown and blue wire leads of power supply cord to the noise filter correctly, referring to the Pictorial Diagram.

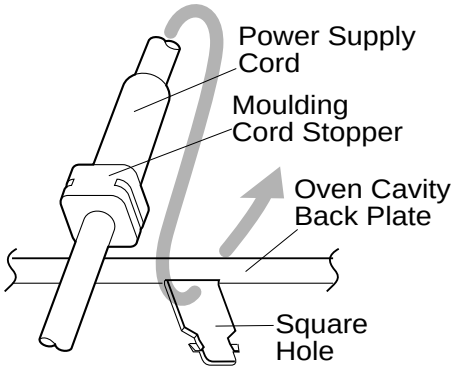


Figure C-3 (b) Power Supply Cord Replacement

MONITORED LATCH SWITCH (SW1), LATCH SWITCH (SW3) AND MONITOR SWITCH (SW2) REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect wire leads from the switches.
3. Remove two (2) screws holding latch hook to oven flange.
4. Remove the switch lever from the oven cavity
5. Remove latch hook assembly from oven flange.
6. Push outward on the two (2) retaining tabs holding switch in place.
7. Switch is now free.

Re-install

1. Re-install each switch in its place. The latch/monitor switches are in the lower position and the monitored latch switch is in the upper position.
2. Re-connect wire leads to each switch. Refer to pictorial diagram.
3. Secure latch hook (with two (2) mounting screws) to oven flange.
4. Install the switch lever to the oven cavity
5. Make sure that the monitor switch is operating properly and check continuity of the monitor circuit. Refer to chapter "Test Procedure" and Adjustment procedure.

MONITORED LATCH SWITCH (SW1), LATCH SWITCH (SW3) AND MONITOR SWITCH (SW2) ADJUSTMENT

1. CARRY OUT 3D CHECKS.

If the monitored latch switch, latch switch and monitor switch do not operate properly due to a misadjustment, the following adjustment should be made.

2. Loosen the two (2) screws holding latch hook to the oven cavity front flange.
3. With door closed, adjust latch hook by moving it back and forth, and up and down. In and out play of the door allowed by the upper and lower position of the latch hook should be less than 0.5mm. The vertical position of the latch hook should be adjusted so that the monitored latch switch and latch switch are activated with the door closed. The horizontal position of the latch hook should be adjusted so that the plunger of the monitor switch is pressed with the door closed.
4. Secure the screws with washers firmly.
5. Check the operation of all switches. If each switch has not activated with the door closed, loosen screw and adjust the latch hook position.

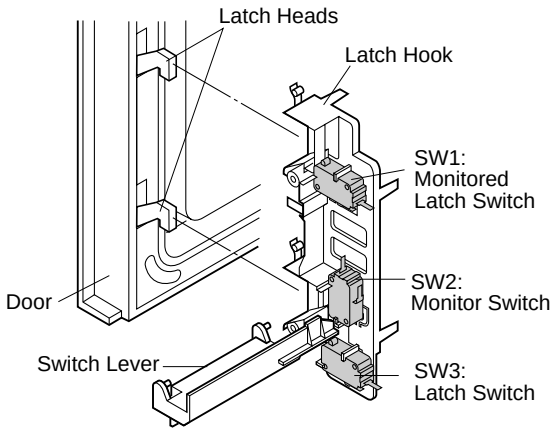


Figure C-4. Latch Switch Adjustments

After adjustment, check the following.

1. In and out play of door remains less than 0.5mm when in the latched position. First check upper position of latch hook, pushing and pulling upper portion of door toward the oven face. Then check lower portion of the latch hook, pushing and pulling lower portion of the door toward the oven face. Both results (play in the door) should be less than 0.5mm.
2. The monitored latch switch, latch switch interrupt the circuit before the door can be opened.
3. Monitor switch contacts close when door is opened.
4. Re-install outer case and check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

DOOR REPLACEMENT

REMOVAL

1. Disconnect the oven from the power supply.
2. Open the door slightly.
3. Insert a putty knife (thickness of about 0.5mm) into the gap between the choke cover and corner portion of door panel as shown in Figure C-5 to free engaging parts.
4. Pry the choke cover by inserting a putty knife in order shown in figure C-5.
5. Release choke cover from door panel.
6. Now choke cover is free.

NOTE: When carrying out any repair to the door, do not bend or warp the slit choke (tabs on the door panel assembly) to prevent microwave leakage.

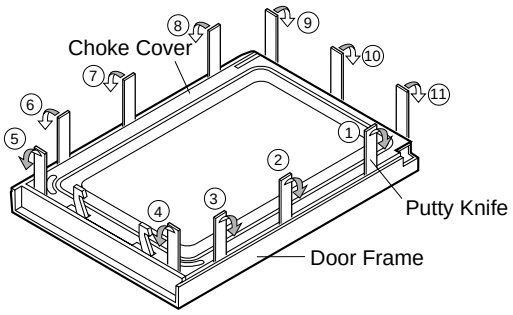


Figure C-5. Door Disassembly

7. Release two (2) pins of door panel from two (2) holes of upper and lower oven hinges by lifting up.
8. Now, door panel is free from oven cavity.
9. Release door panel from ten (10) tabs of door frame and remove door frame by sliding the door panel downward.
10. Now, door panel with sealer film is free.
11. Tear sealer film from door panel.
12. Now, door panel is free.
13. Slide latch head upward and remove it from door frame with releasing latch spring from door frame and latch head.
14. Now, latch head and latch spring are free.
15. Remove door screen from door frame.
16. Now, door screen is free.

RE-INSTALL

1. Re-install door screen to door frame.
2. Re-install latch spring to the head. Re-install latch spring to the door frame. Re-install latch head to the door frame.
3. Re-install door panel to door frame by fitting ten (10) tabs of door frame to ten (10) holes of door panel.
4. Put sealer film on door panel. Refer to "Sealer Film" and figure C-7, on how to handle the new film.
5. Catch two (2) pins of door panel on two (2) hole of upper and lower oven hinges.
6. Re-install choke cover to door panel by pushing.

Note: After any service to the door;

(A) Make sure that monitored latch switch, latch switch and monitor switch are operating properly. (Refer to chapter "Test Procedures".).

(B) An approved microwave survey meter should be used to assure compliance with proper microwave radiation emission limitation standards.

After any service, make sure of the following :

1. Door latch heads smoothly catch latch hook through latch holes and that latch head goes through center of latch hole.
2. Deviation of door alignment from horizontal line of cavity face plate is to be less than 1.0mm.
3. Door is positioned with its face pressed toward cavity face plate.
4. Check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

Note: The door on a microwave oven is designed to act as an electronic seal preventing the leakage of microwave energy from oven cavity during cook cycle. This function does not require that door be air-tight, moisture (condensation)-tight or light-tight. Therefore, occasional appearance of moisture, light or sensing of gentle warm air movement around oven door is not abnormal and do not of themselves, indicate a leakage of microwave energy from oven cavity.

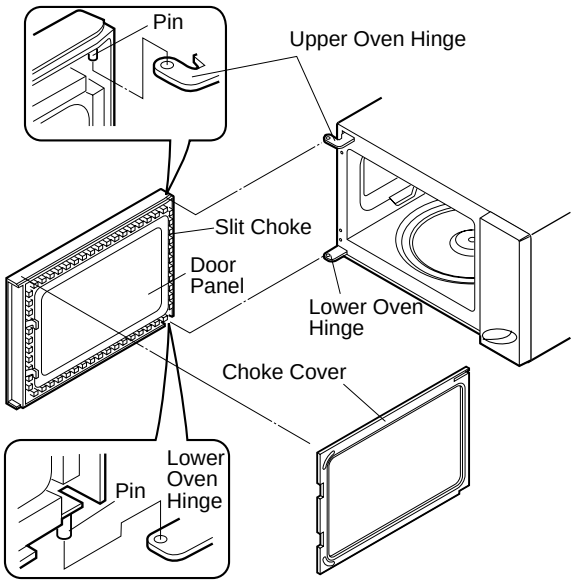


Figure C-6. Door Replacement

SEALER FILM

Installation

1. Put the adhesive tape on the backing film of the sealer film as shown in Fig. C-7.
2. Tear the backing film by pulling the adhesive tape.
3. Put the pasted side of the sealer film on the door panel

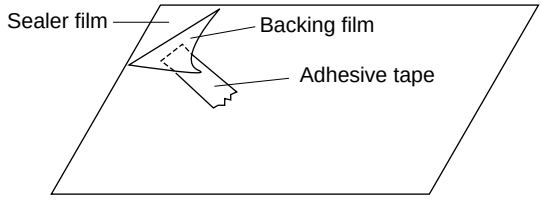


Figure C-7. Sealer film

MICROWAVE MEASUREMENT

After adjustment of monitored latch switch, latch switch, monitor switch and door are completed individually or collectively, the following leakage test must be performed with a survey instrument and it must be confirmed that the result meets the requirements of the performance standard for microwave oven.

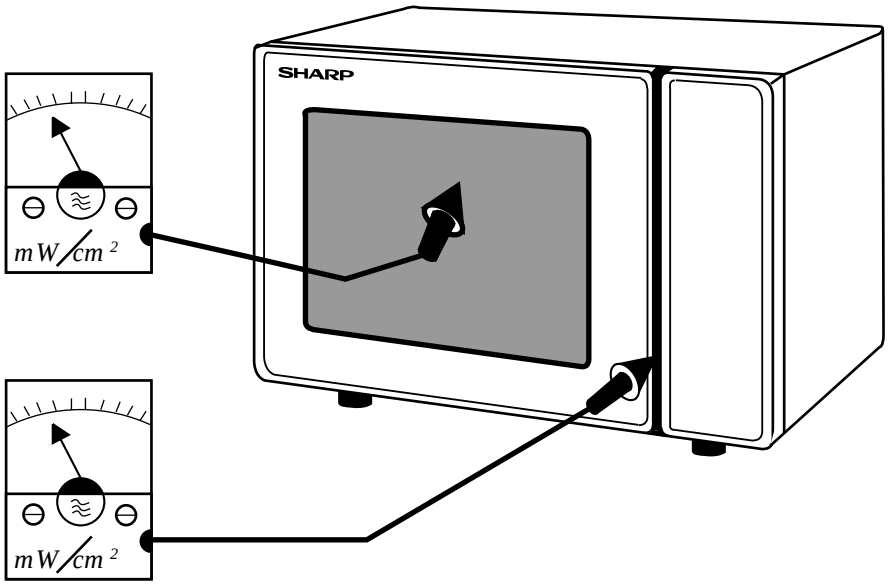
REQUIREMENT

The safety switch must prevent microwave radiation emission in excess of 5mW/cm^2 at any point 5cm or more from external surface of the oven.

PREPARATION FOR TESTING:

Before beginning the actual test for leakage, proceed as follows;

1. Make sure that the test instrument is operating normally as specified in its instruction booklet.
   Important:
   Survey instruments that comply with the requirement for instrumentations as prescribed by the performance standard for microwave ovens must be used for testing.
   Recommended instruments are:
   NARDA 8100
   NARDA 8200
   HOLADAY HI 1500
   SIMPSON 380M
2. Place the oven tray into the oven cavity.
3. Place the load of 275 ± 15ml of water initially at 20 ± 5˚C in the centre of the oven tray. The water container should be a low form of 600 ml beaker with inside diameter of approx. 8.5cm and made of an electrically non-conductive material such as glass or plastic.
   The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
4. Close the door and turn the oven ON with the timer set for several minutes. If the water begins to boil before the survey is completed, replace it with 275ml of cool water.
5. Move the probe slowly (not faster that 2.5cm/sec.) along the gap.
6. The microwave radiation emission should be measured at any point of 5cm or more from the external surface of the oven.



Microwave leakage measurement at 5 cm distance

TEST DATA AT A GLANCE

PARTS	SYMBOL	VALUE / DATA
Fuse	F1	T6.3A 250V
High voltage fuse	F2	0.6A 5kV
Temperature fuse (OVEN)	TF	120°C
Oven lamp	OL	240 V 25W
High voltage capacitor	C	0.91μF AC 2100V
Magnetron	MG	Filament < 1Ω / Filament – chassis ∞ ohm.
High voltage transformer	T	Filament winding < 1Ω Secondary winding Approx. 205 Ω Primary winding Approx. 2.7 Ω

WARNING: DISCONNECT THE PLUG WHEN MEASURING RESISTANCE.

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED.

NOTE: "★" indicates components with potential above 250V.

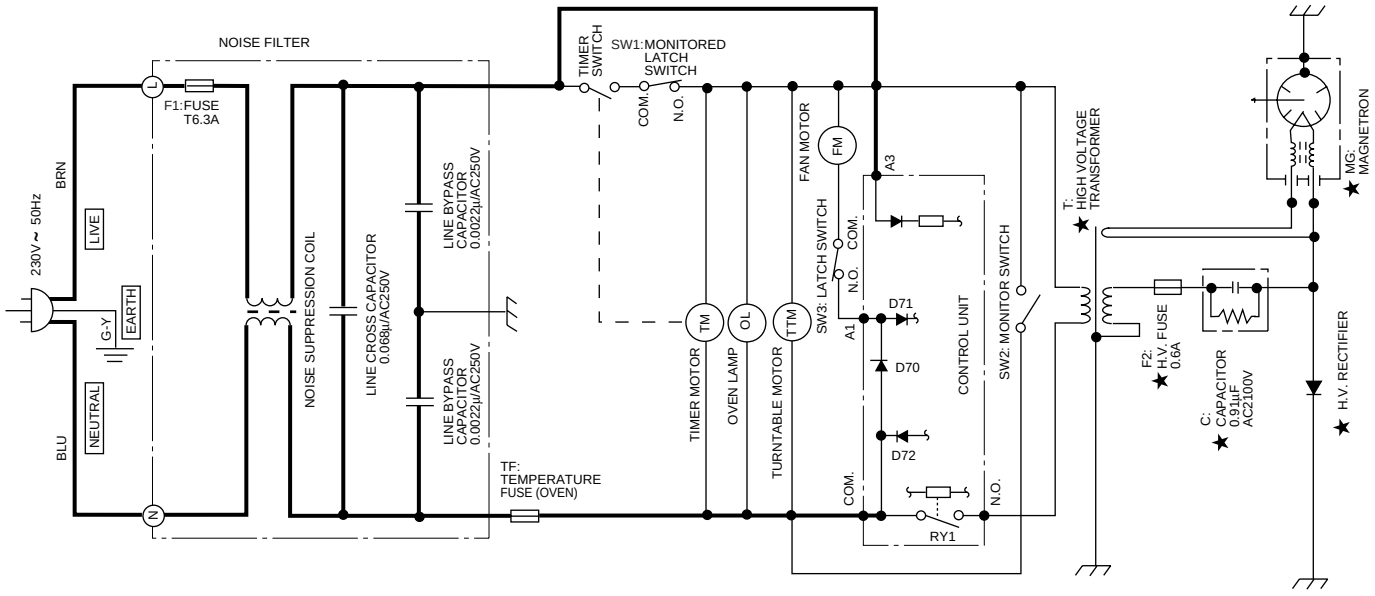


Figure O-1 Oven Schematic-OFF Condition

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED.
2. COOKING TIME PROGRAMMED.

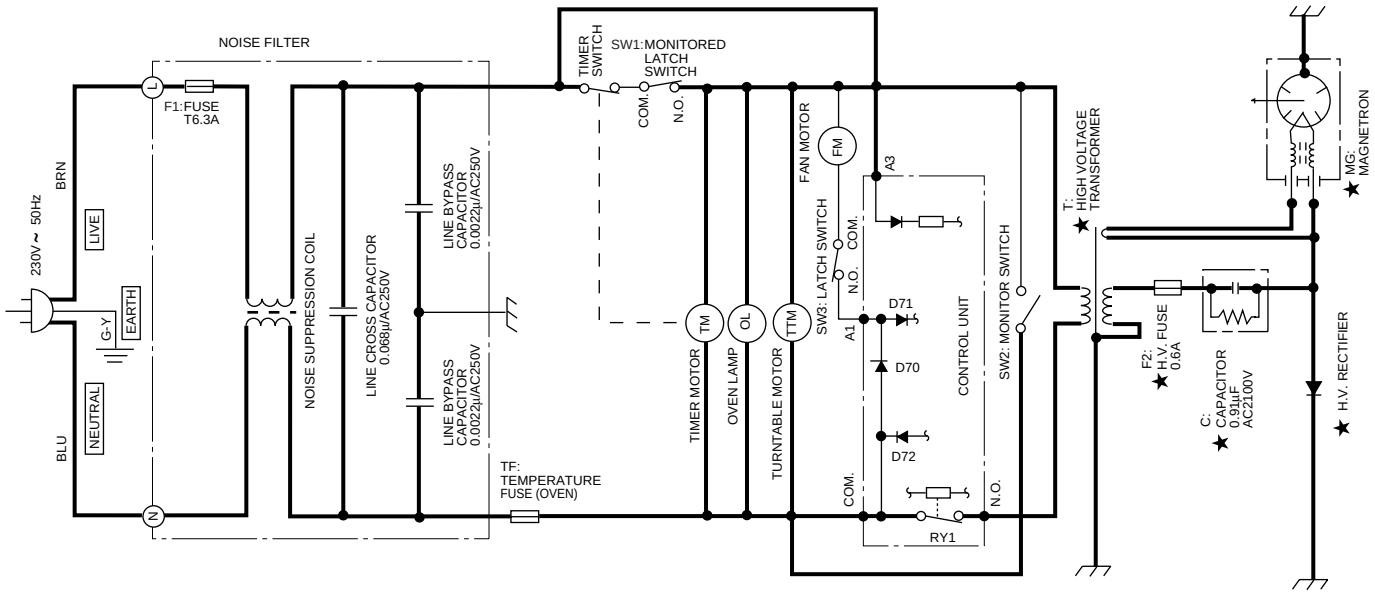


Figure O-2 Oven Schematic-ON Condition

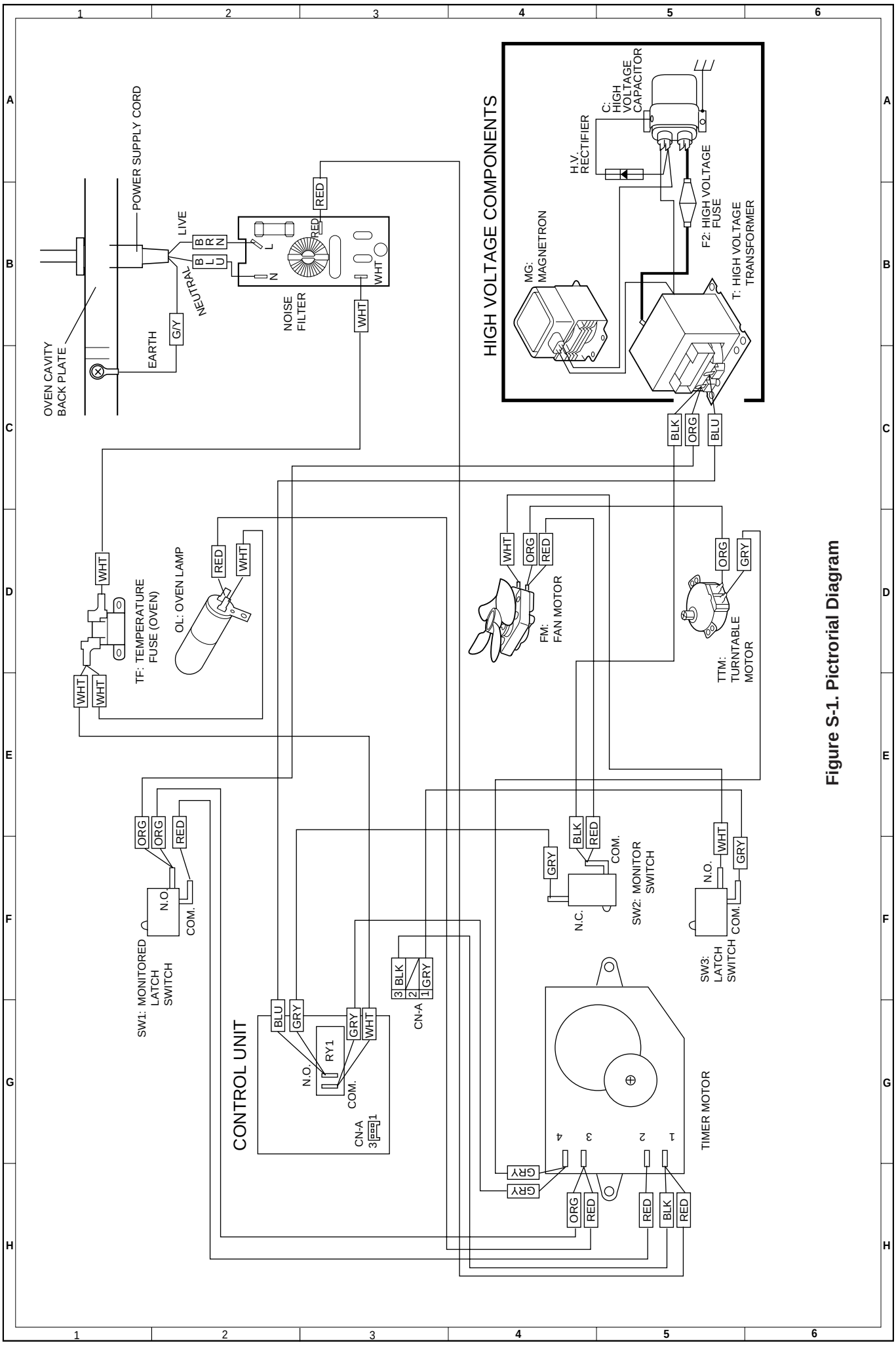


Figure S-1. Pictrorial Diagram

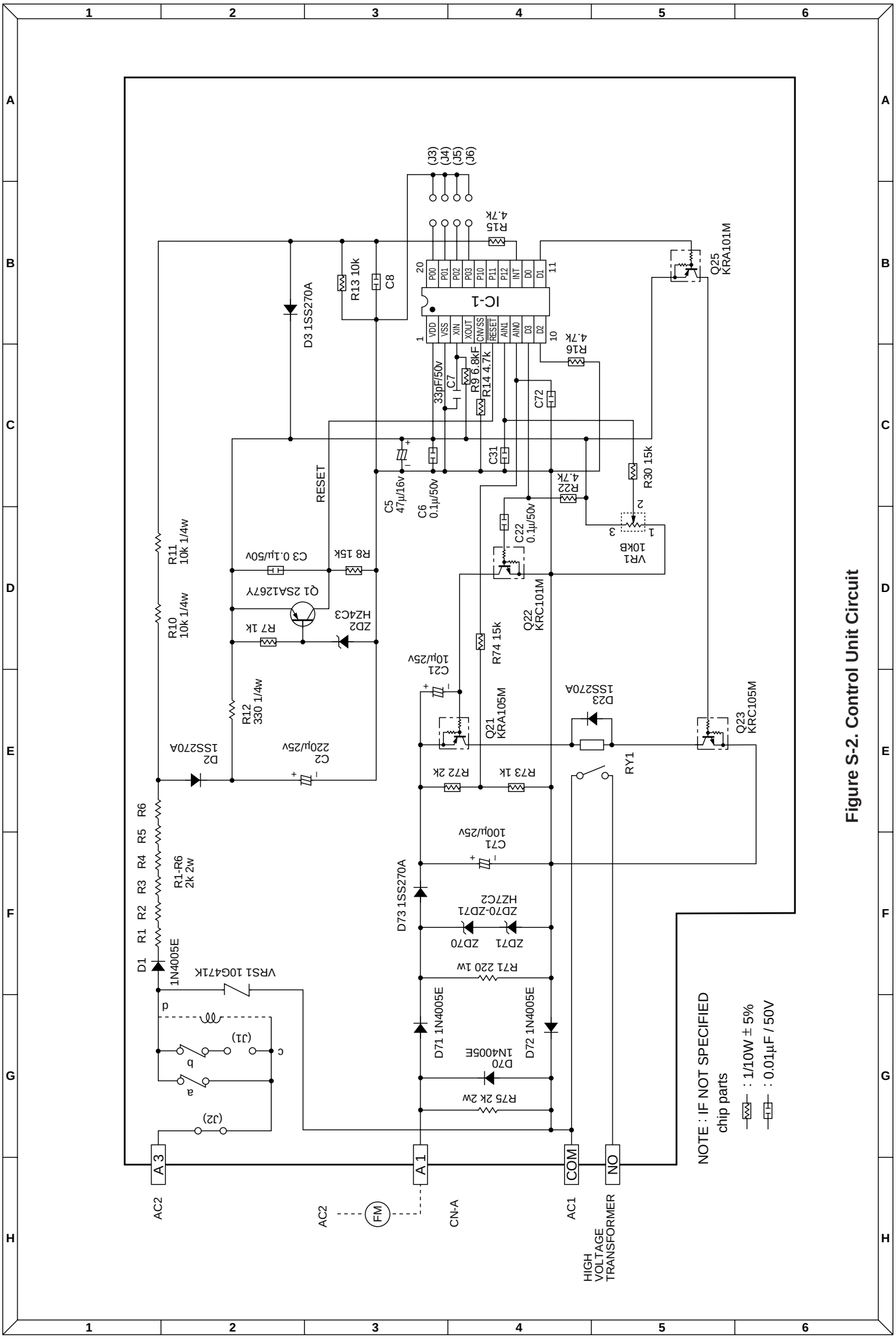


Figure S-2. Control Unit Circuit

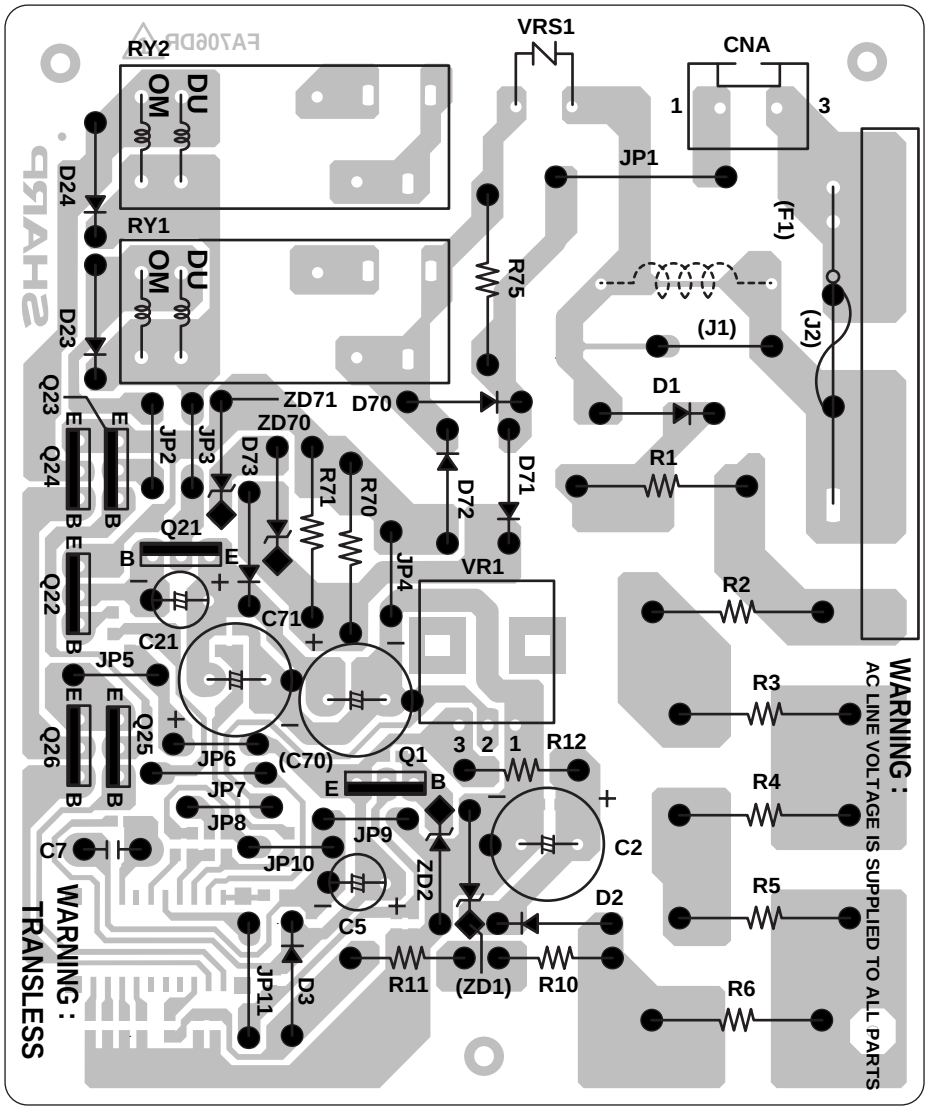


Figure S-3. Printed Wiring Board

PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V.

	REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE
			ELECTRIC PARTS		
*	C	RC-QZA295WRZZ	High voltage capacitor	1	AV
*	C	RC-QZA218WRE0	High voltage capacitor (Interchangeable) for production use	1	--
	F1	QFS-CA027WRZZ	Fuse T6.3A	1	AE
*	F2	QFS-IA004WRE0	High voltage fuse	1	AK
	FM	RMOTEA403WRZZ	Fan motor	1	AZ
	FM	RMOTEA340WRE0	Fan motor (Interchangeable)	1	AX
	FM	RMOTEA389WRE0	Fan motor (Interchangeable) for production use	1	--
Δ*	MG	RV-MZA306WRZZ	Magnetron	1	BL
	OL	RLMPTA083WRZZ	Oven lamp	1	AM
	SW1	QSW-MA137WRE0	Monitored latch switch	1	AH
	SW2	QSW-MA138WRE0	Monitor switch	1	AH
	SW3	QSW-MA137WRE0	Latch switch	1	AH
*	T	RTRN-A697WRZZ	High voltage transformer	1	BQ
	TF	QFS-TA038WRE0	Temperature fuse 120˚C (Oven)	1	AK
	TM	QSWTEA132WRZZ	Timer motor	1	BB
	TTM	RMOTDA226WRE0	Turntable motor	1	AT
	TTM	RMOTDA173WRE0	Turntable motor (Interchangeable)	1	AX
	1- 1	QACC-A075WRE0	Power supply cord	1	AW
	1- 1	QACC-A128WRZZ	Power supply cord (Interchangeable) for production use	1	--
	1- 2	FPWBFA347WRKZ	Noise filter	1	AX
*	1- 3	FH-DZA102WRKZ	High voltage rectifier assy	1	AN
*	1- 3	FH-DZA106WRKZ	High voltage rectifier assy (Interchangeable) for production use	1	--
			CABINET PARTS		
	2- 1	GCABUA878WRPZ	Outer case cabinet [R-207(IN)]	1	BD
	2- 1	GCABUA817WRPZ	Outer case cabinet [R-207(W)]	1	BD
	2- 2	GLEGPA074WRE0	Foot	2	AC
	2- 3	PCUSUA605WRPZ	Cushion	1	AG
			CONTROL PANEL PARTS		
	3- 1	DPWBFC230WRKZ	Control unit	1	BE
	3- 2	HPNLCB772WRRZ	Control panel [R-207(IN)]	1	AW
	3- 2	HPNLCB770WRRZ	Control panel [R-207(W)]	1	AW
	3- 3	JBTN-B175WRFZ	Open button [R-207(IN)]	1	AG
	3- 3	JBTN-B165WRFZ	Open button [R-207(W)]	1	AH
	3- 4	JKNBKA686WRTZ	Timer knob [R-207(IN)]	1	AS
	3- 4	JKNBKA684WRFZ	Timer knob [R-207(W)]	1	AR
	3- 5	JKNBKA687WRTZ	Vari knob [R-207(IN)]	1	AS
	3- 5	JKNBKA685WRFZ	Vari knob [R-207(W)]	1	AR
	3- 6	MSPRCA050WRE0	Button spring	1	AB
	3- 7	MSPRTA210WREZ	Vari spring	1	AE
	3- 8	XEPSD30P10XS0	Screw: 3mm x 10mm	5	AA
			OVENPARTS		
Δ	4- 1	PHOK-A122WRFZ	Latch hook	1	AM
	4- 2	LBNDKA038WRP0	Capacitor holder	1	AF
	4- 3	NFANJA029WRE0	Fan blade	1	AK
	4- 4	PDUC-A801WRWZ	Fan duct	1	AR
Δ	4- 5	FOVN-A483WRTZ	Oven cavity	1	BF
	4- 6	GCOVHA425WRPZ	Turntable motor cover	1	AK
	4- 7	MLEVPA241WRFZ	Switch lever	1	AG
	4- 8	PCOVPA276WRE0	Waveguide cover	1	AM
	4- 9	PCUSUA237WRP0	Cushion	2	AF
	4-10	PPACGA176WREZ	TTM packing	1	AC
	4-11	PCUSUA278WRP0	Cushion	1	AB
	4-12	PCUSGA389WRP0	Cushion	1	AG
	4-13	PCUSGA568WREZ	Cushion	1	AC
			DOORPARTS		
Δ	5- 1	FDORFA348WRTZ	Door panel assembly	1	BC
Δ	5- 2	GWAKPA882WRRZ	Door frame [R-207(IN)]	1	AZ
Δ	5- 2	GWAKPA843WRRZ	Door frame [R-207(W)]	1	AW
	5- 3	HPNL-A764WREZ	Door screen	1	AP
Δ	5- 4	LSTPPA205WRFZ	Latch head	1	AF
	5- 5	MSPRTA187WRE0	Spring	1	AC
	5- 6	PSHEPA782WREZ	Sealer film	1	AG
	5- 7	GCOVHA424WRFZ	Choke cover	1	AK
			MISCELLANEOUS		
	6- 1	NTNT-A034WRF0	Turntable	1	AM
	6- 2	FROLPA101WRKZ	Turntable support	1	AR
	6- 3	TCAUHA168WRR0	H caution label	1	AH

Note: The parts marked "Δ" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V.

REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE
6- 4	FW-VZB959WREZ	Main wire harness	1	AT
6- 5	TINSZA076WRRZ	Instruction book	1	AM

SCREWS,NUTS AND WASHERS

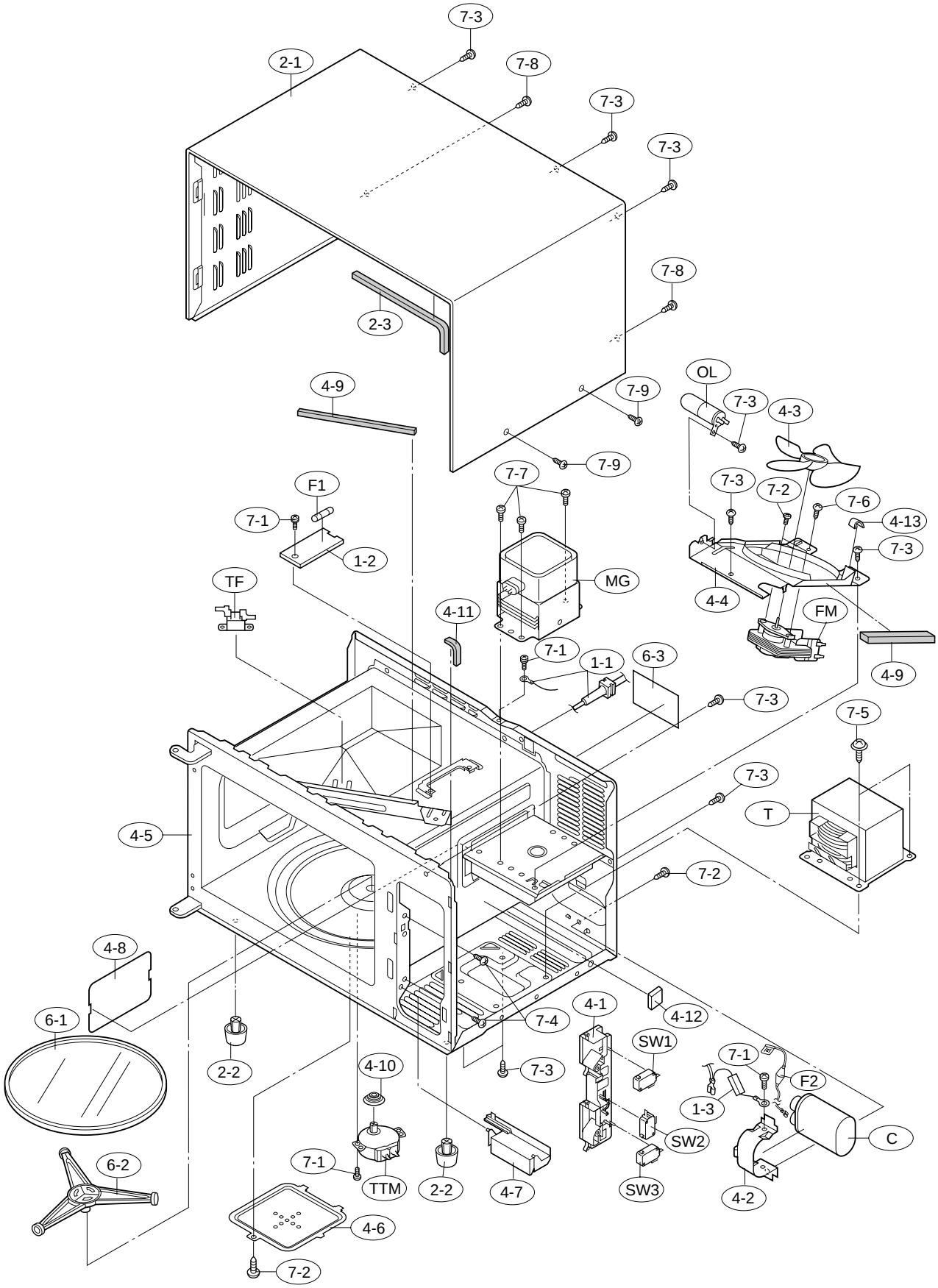
7- 1	XHPSD40P08K00	screw : 4 mm x 8 mm	4	AC
7- 2	XHTSD40P08RV0	Screw : 4mm x 8mm	4	AA
7- 3	XOTSD40P08000	Screw : 4mm x 8mm	10	AA
7- 4	LX-CZ0052WRE0	Special screw	2	AA
7- 5	LX-EZA042WRE0	Special screw	2	AB
7- 6	XHPSD30P06000	Screw : 3mm x 6mm	1	AA
7- 7	XHPSD40P08000	Screw : 4mm x 6mm	3	AA
7- 8	XOTSD40P12RV0	Screw : 4mm x 12mm	3	AA
7- 9	XOTSE40P08000	Screw : 4mm x 8mm	2	AA

HOW TO ORDER REPLACEMENT PARTS

To have your order filled prompty and correctly, please furnish the following information.

1. MODEL NUMBER
3. PART NO.
2. REF. NO.
4. DESCRIPTION

OVEN PARTS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4-1
4-12
SW1
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7-1
F2
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SW2
C
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4-7
SW3
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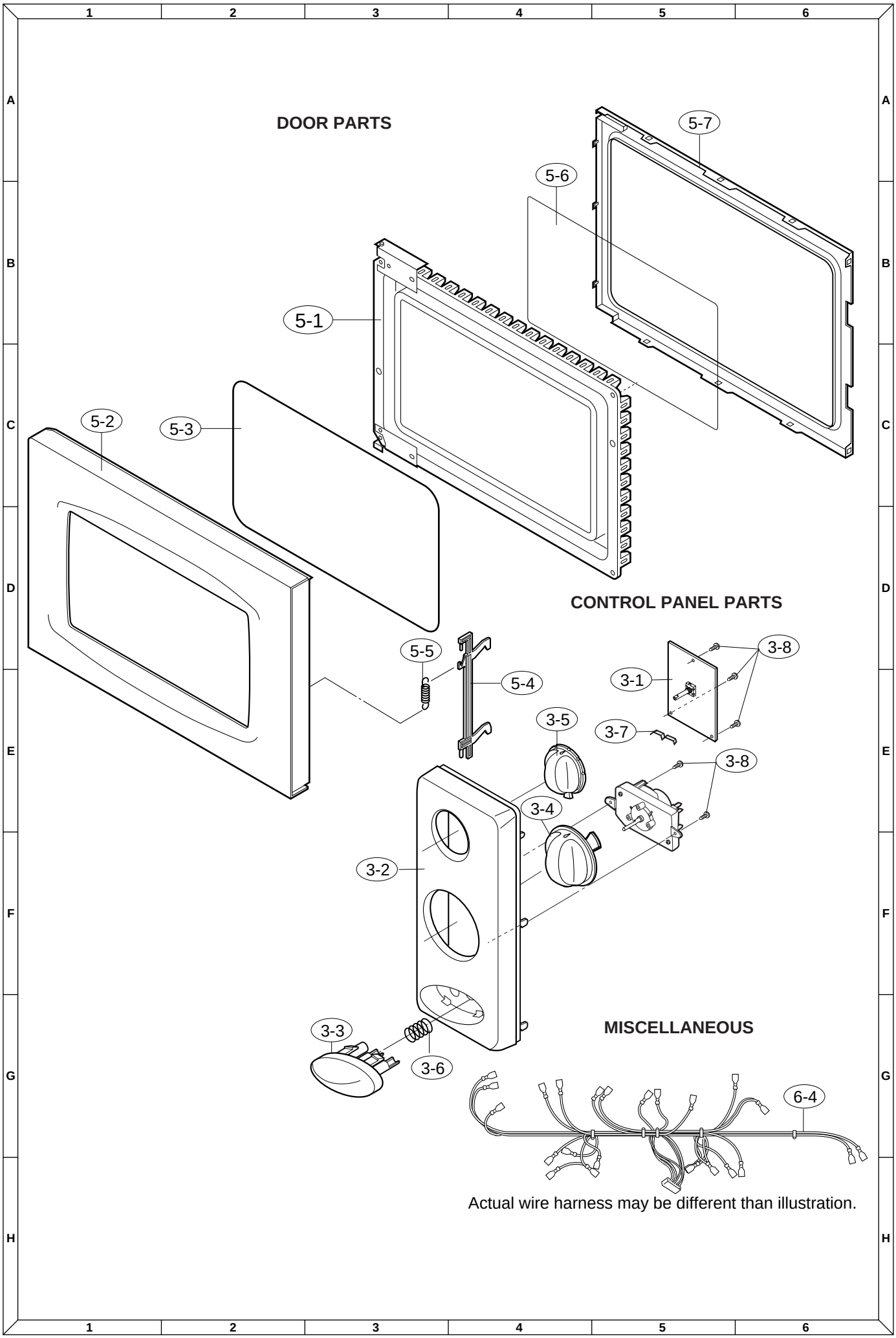
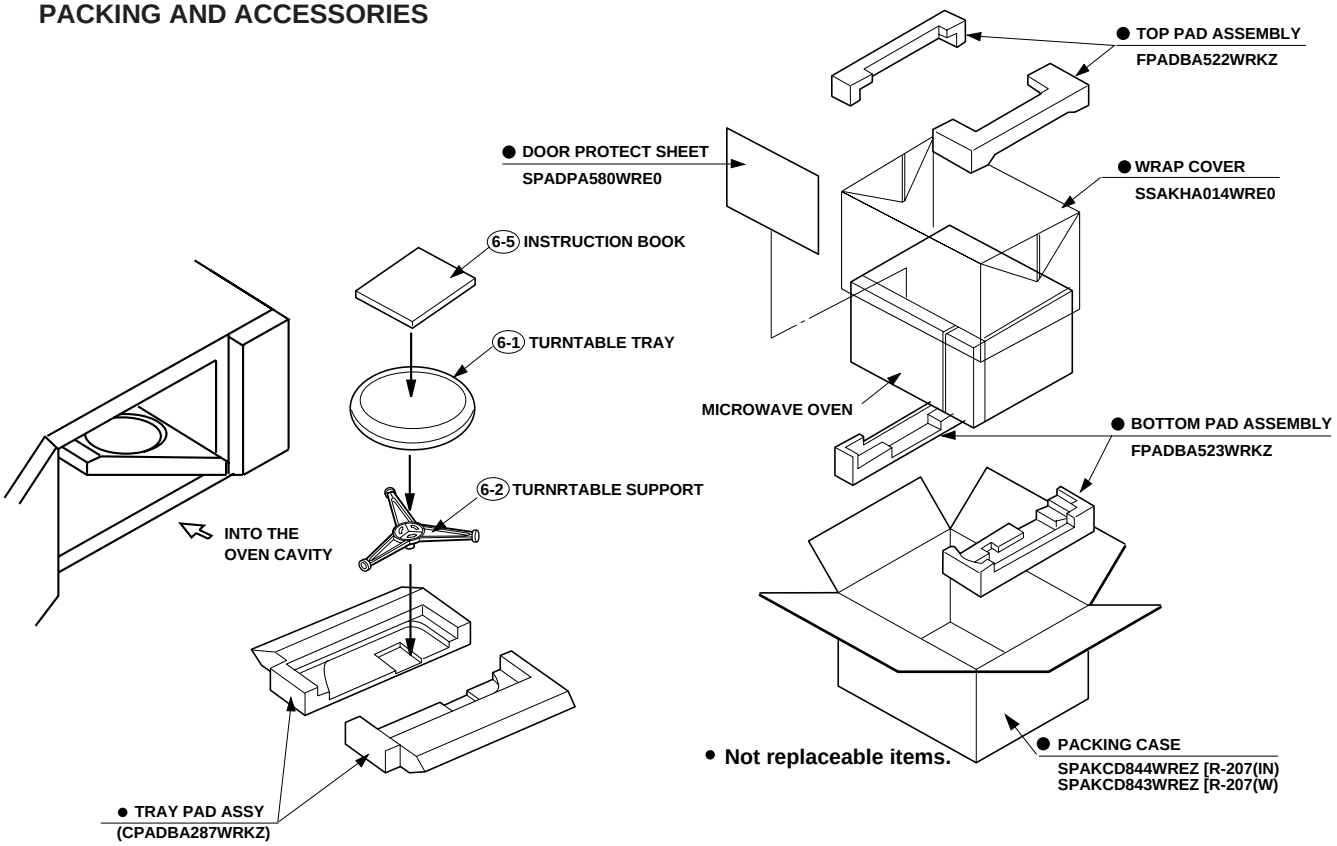
4-6
7-2



Actual wire harness may be different than illustration.

PACKING AND ACCESSORIES



• Not replaceable items.

SHARP®

'03 SHARP CORP. (12S0EE)